School of Accounting

A Comparative Analysis of Voluntary Risk Disclosures

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This thesis is presented for the Degree of
Doctor of Philosophy
of
Curtin University

September 2012

DECLARATION

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

Signature: ……

Date: ……..

ACKNOWLEDGEMENT

In the name of Allah, The Most Gracious, The Most Merciful

"Thanks to Allah the greatest for everything"

Learning and finishing this thesis is a hard and long journey. Therefore, it is impossible for me to finish this thesis without the help from people to whom I would like to express my deepest thanks and acknowledgement.

I am greatly indebted to my wonderful supervisor, Professor Greg Tower for his guidance, advice and enthusiasm throughout this thesis process. Without his support, motivation, kindness and patience, the completion of this thesis would not have been possible. Your extremely valuable feedback and timely suggestions are much appreciated. I am also thankful to Dr. Rusmin, my co-supervisor, for all his beneficial advice and guidance.

I also would like to thank to my thesis chairperson, research coordinator, my government, Directorate Higher of Education (DIKTI) and the people of Indonesia, also to my institution, Sebelas Maret University.

My warm gratitude is also extended to my dear colleagues and friends for support and friendship. Dr.Djoko Suhardjanto, Merry Kurniaty, Bhimo Samudro, Bambang Harjito and all AIPSSA friends in Perth, also to all Sapoe ledee, KNPI, HIPMI, KADIN friends in Solo. Thank you very much.

I wish to express my sincere thanks to Dr Raja Adzrin Raja Ahmad and Johan Arifin who have helped me in checking the validity and reliability of my data. My appreciation also goes to Professor Alistair Brown, Professor Ross Taplin, Professor Mitchell Van der Zahn, and Professor Julie Plummer for their comments at the inception of this project.

I would like also to express my deepest thank to my father Ravik Karsidi and my mother Handayani who have given their love and valuable meaning of life. For my sister Dewi Sari Pinandita and her husband Irwanto Wahyu Kusumo and their son Aldebaran Widya Rahmanu and my sister Hanifia Samha Wardhani, thanks for your love and for motivating me. I also give thanks to all extended families of Sudoto Rejodikromo and Hagnyo Sutomo for their attention along the way.

My thanks are also extended for my father-in-law Wildan Suyuti, my mother-in-law Sriyati Zakiyah and all family for their patience and support.

The last, I express my thanks to my beloved wife, Anita Zulfiani, also for my beloved son Arham Zulfagar Probohudono (2 years old) and my beloved daughter Alisha Zafira Probohudono (2 months old). This thesis is dedicated to you. Thanks for your love, understanding, encouragement, motivation and spirit given to me so that I can finish this long thesis. Words are not enough to describe my thanks. I love you.

ABSTRACT

This thesis examines voluntary risk disclosures from 600 firm year annual reports in four countries' (Australia, Indonesia, Malaysia, and Singapore) manufacturing listed companies for the 2007-2009 financial years. This is an important time span to investigate risk disclosures as it encompasses those years most directly impacted by the Global Financial Crisis (GFC). Longitudinal and cross country analyses test the veracity of agency theory to predict the level of firms' risk disclosures. A comprehensive risk disclosure index (RDI) checklist is created and tested to explain the extent of such communication over time. T-tests, ANOVA, correlations and regression analysis are used for the statistical testing.

The findings show that overall RDI scores over the economically-challenging GFC time period is relative low averaging 33.73%. The RDI rises every year ranging from 31.46% in 2007, 34.20% in 2008, and 35.54% in 2009. There is a vast disparity of communication across the various risk elements. The RDI item "Identifying, evaluating and managing significant risks**"** has the highest level of communication (91.17%), while "Effects of inflation on assets quantitative'' is the lowest RDI item with no disclosure (0 %). The highest major sub-category for RDI is business risk (46.55%) while the strategy risk category (17.21%) is the lowest communicated.

Multiple regression analysis provides evidence that size, managerial ownership, board independence, and profitability are positively associated with the extent of voluntary risk disclosure. There are also clear country differences, for instance, Indonesian companies have statistically lower levels of risk disclosure compared with Malaysia. These findings are useful for self-evaluation and benchmarking of risk communication by other corporations across the global landscape. The need for mandatory regulation regarding key risks elements is advanced. Overall, varying levels of risk disclosure over time and across countries are influenced by key firm characteristics and economic drivers consistent with agency theory tenets.

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Glossary of Key Abbreviations

ANOVA	Analysis of Variance
APEC	Asia Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
ASX	Australian Stock Exchange
AASB	Australian Accounting Standards Board
BRDI	Business Risk Disclosure
CRDI	Credit Risk Disclosure
GDP	Gross Domestic Product
GFC	Global Financial Crisis
GRI	Global Report Initiative
IAS	International Accounting Standard
IASB	International Accounting Standard Board
IDX	Indonesia Stock Exchange
IFRS	International Financial Reporting Standards
MASB	Malaysian Accounting Standard Board
MRDI	Market Risk Disclosure
MYX	Malaysia Exchange
NAICS 2007	North American Industry Classification System 2007
OLS	Ordinary Least Square
ORDI	Operating Risk Disclosure
RDI	Risk Disclosure Index
SGX	Singapore Stock Exchange
SRDI	Strategy Risk Disclosure
UNDP	United Nations Development Program

Related Thesis Publications

Journal articles

Probohudono, A. N., G. Tower, and Rusmin. 2012. Risk Disclosure during the Global *Financial Crisis. Social Responsibility Journal, forthcoming*.

Probohudono, A. N., G. Tower, and Rusmin. 2012. Diversity in Risk Communication. *Australasian Accounting Business and Finance Journal, forthcoming,* 6 (4).

Conference Papers

Probohudono, A. N., G. Tower, and Rusmin. 2012. Risk Communication in South-East Asian Manufacturing Companies. Paper presented at *American Accounting Association Annual Meeting (AAA) Annual Conference*. August 4- 8, 2012, Washington DC, U.S.A.

Probohudono, A. N., G. Tower, and Rusmin. 2011. Assessing the Communication of Risk During the Global Financial Crisis. Paper presented at *The 48th 2011 British Accounting and Finance Association (BAFA) Annual Conference*. April 12- 14, 2011, Aston Business School, Birmingham, U.K.

Probohudono, A. N. 2011. A Comparative Analysis of Voluntary Risk Disclosures in South-East Asian Manufacturing Companies. Paper presented at *Curtin Business School Doctoral Colloquium*. September 15 - 16, 2011, Perth, Australia.

Probohudono, A. N. 2010. A Comparative Analysis of Voluntary Risk Disclosures. Paper presented at *Curtin Business School Doctoral Colloquium*. September 30 - October 1, Perth, Australia.

CHAPTER I
INTRODUCTION

1.1 Introduction

This thesis longitudinally examines voluntary risk disclosures within annual reports in four countries' (Australia, Indonesia, Malaysia, and Singapore) manufacturing listed companies for the 2007-2009 financial years. This is a crucially important time span to investigate risk disclosures as it encompasses those years most directly impacted by the Global Financial Crisis (GFC). Longitudinal and cross country analysis will help test the veracity of agency theory in predicting the level of listed firms' risk disclosures. Agency theory is used to offer insights into manufacturing listed companies' voluntary risk disclosure practices, particularly in ascertaining whether enhanced country traits, company size, managerial ownership, and board independence variables lead to an increased level of voluntary risk disclosure. This thesis will shine more light about the level of manufacturing firms' communication of risk disclosures.

1.2 Background

The entire paradigm of accounting has changed with a broadened sense of responsibility to all stakeholders (Mirfazli 2008). Wallage (2000) argues that good sustainability reporting should provide information that is relevant, reliable, neutral, understandable and complete. Such comprehensiveness should thus include the comprehensive communication of all key risk factors experienced by the company. CSR reporting is an extension of disclosure into non-traditional areas with a greater demand for accountability, ethical actions and being transparent about externalities (Pratten and Mashat 2009). This thesis examines the communication of risk data which fits nicely into these broader categories.

The perception of risk in contemporary times is changing. In the past, risk was generally seen negatively, while now risk is viewed either positively or negatively in response to outcomes of a myriad of events and perspectives (Linsley and Shrives 2006). Partly because of the dual perspectives of risk as both positive and negative, stakeholders need more information on risk disclosure to make better business and investment decisions. Beretta and Bozzoland (2004) state that the increase in complexity of regulations, operations and business strategies, makes it harder for investors to clearly understand financial information without a good explanation of risk factors.

The level of risk disclosures released by companies is, arguably, insufficient (Cabedo and Tirado 2004). Companies are currently only rarely obliged to issue risk disclosures (i.e. so-called mandatory risk disclosures). This limits the information available to external users for economic decision making (Cabedo and Tirado 2004). Beretta and Bozzoland (2004, P.266) explain the need of risk information and note "investors need to understand the risks a company takes to create value and they want to have information on the sustainability of current value-creation strategies." This requires effective communication on risks affecting a companies' strategies, and managerial action to capitalize on emerging opportunities and to minimize the risk of failure (Beretta and Bozzoland 2004). Investors need risk information to let them to effectively diversify their portfolios (Solomon et al. 2000; Beretta and Bozzoland 2004).

Risk reporting and disclosures are becoming a greater concern of international accounting standard setters (Cabedo and Tirado 2004; Brown et al. 2008; Atan and Maruhun 2009). For example, the International Accounting Standards Board (IASB 2008) under *IAS No.1: Presentation of Financial Statement* and *IAS 32: Financial Instruments: Presentation* requires the companies to provide information on principal uncertainties faced and disclosures of information for some specific

risks.[1] *IFRS 7* regulates *financial instrument: disclosures*. Further, the Financial Accounting Standard Board (FASB 1998), under SFAC No. 133 establishes compulsory disclosures of market risks arising from the use of financial assets.

The root of the risk disclosure topic in the literature is located within the requirement from Basel committee[2] in 1998 to disclose more and better risk information in the UK banking sector. Since then, there is emerging research on mandatory risk reporting especially in the banking sector (Linsley and Shrives 2005b). Nowadays, mandatory risk disclosure is primarily concerned about market risk related to financial instruments and derivatives. Therefore, investors may not fully recognize the sensitivity of the firm's risk profile and they will be more likely to use voluntary disclosures to make interpretations concerning firm-specific risk (Jorgensen and Kirschenheiter 2003). However the vast majority of (non-bank) risk disclosures remain purely voluntary in contemporary times; this thesis focuses exclusively on voluntary risk disclosure.

Risk could be defined as the uncertainty related with both potential gain and loss (Solomon et al. 2000). Risk is also defined as the difference between the actualities and expected (Remenyi and Heafield 1996). These values reflect the magnitude of the risk. Cabedo and Tirado (2004, P.184) state "the current environment in which firms are working, characterized by a high level of uncertainty, does not make it easy to forecast future company behavior. A series of internal and external factors are currently conditioning company wealth and are the causal factors behind the challenges and threats facing firms today". Linsley and

[1] IAS 1 requires companies to disclose: financial risk management objectives and policies; management's judgments in determining when considerably all the substantial risks and rewards of ownership of financial assets and lease assets are transferred to other entities; also firms are required to disclose information about the key assumptions relating the future or uncertainty that have a substantial risk of causing a material adjustment to the amounts of assets and liabilities in the next financial year (IASB 2008).

[2] The Basel Committee is an important forum for banking supervisory matters. Its objective is to increase the quality of banking supervision worldwide.

Shrives (2006, P.388) compare definitions of 'risk' in term of finance textbooks as "a set of outcomes arising from a decision that can be assigned probabilities whereas 'uncertainty' arises when probabilities cannot be assigned to the set of outcomes". These definitions of risk are adopted in this thesis because they comprehensively embrace 'risks' and 'uncertainties'. Linsley and Shrives (2006, P.389) more specifically define risk disclosures as "if the reader is informed of any opportunity or prospect, or of any hazard, danger, harm, threat or exposure, that has already impacted upon the company or may impact upon the company in the future or of the management of any such opportunity, prospect, hazard, harm, threat or exposure". This definition of risk is adopted in this thesis.

Mirfazli (2008) lists four reasons why companies conduct social disclosure: 1) create a good impression, 2) support the continuity of the company, 3) increase company legitimacy, and 4) minimization of risk. This thesis offers important insights especially about the fourth key reason. To measure the level of risk disclosure practices of these four countries' manufacturing listed companies, this thesis creates a 34-item benchmark Risk Disclosure Index (RDI), based on an extensive list of business, strategy, operating, market and credit voluntary risk disclosure items from key past studies (see Chapter 4 for more details). In addition, statistical testing is conducted to explore the association between the extent to which country, company size, managerial ownership, and board independence affect the RDI communication of these four countries' manufacturing listed companies.

Cross-country comparative testing is important. Williams (1999) argues that factors that explain differences in disclosure across national boundaries provide important guidance for the International Accounting Standards Committee (now known as the IASB) in designing accounting convergence. The reason to expect that the disclosure across countries may be dissimilar is in terms of different business communication even between countries with similar cultures for example U.S and Canada

(Robb et al. 2001). This thesis is motivated by the fact that the vast majority of research into risk disclosures is based on developed countries' data. Cross country analysis in Asian countries, although important, is rarely conducted. This thesis uses samples in companies based in Australia, Indonesia, Malaysia, and Singapore. These four countries have clear differences in many areas (see Chapter 2).

The selected time span using the 2007-2009 financial years is especially appropriate due to the variable impact of the 'global financial crisis' in Australia, Indonesia, Malaysia, and Singapore. Singapore and Malaysia experienced a greater drop in economic activity than did Indonesia or Australia (see Chapter 2 for details). Thus, the time span of 2007-2009 has been selected to best understand the extent of risk disclosures communication over an economically challenging economic timeframe for the sample countries.

The financial crisis of 2007–2009 represents the most serious slowdown the world economy has experienced since the Great Depression 1929-1933 (Loser 2009). The collapse of a global housing bubble, which peaked in the United States (U.S.) in 2006, caused the value of securities tied to real estate pricing to plummet, thereafter damaging financial institutions globally (Kenc and Dibooglu 2010). Mishkin (2011) states that the financial crisis of 2007-2009 can be divided into two different phases in the U.S. The first phase is from August 2007 to August 2008 with major losses in the U.S. financial sub-prime residential mortgages. Although this troubled the U.S. financial markets, real GDP in the U.S. continued to rise into the second quarter of 2008, but in mid-September 2008 the financial crisis entered the more serious phase. Key events were that the investment bank Lehman Brothers entered bankruptcy on 15 September 2008, the insurance firm AIG collapsed on 16 September 2008, there was a run on the Reserve Primary Fund money market fund on the same day and the U.S. government began to enact the Troubled Asset Relief Program (TARP) (Mishkin 2011). What started as a credit crisis in July 2007 in the U.S. spread to other countries and brought the

global financial system to a perceived large-scale crisis (Kenc and Dibooglu 2010). The crisis resulted in a recession in a number of advanced economies, the developing economies and emerging markets were also affected, but the impact varied across countries and regions. Economies worldwide slowed during this period as credit tightened and international trade declined (Claessens et al. 2010).

The Global Financial Crisis (GFC) also had a negative effect on some of East Asia's strongest economies because the decline in demand for East Asian goods in world markets, with exports from many East Asian economies dropping in value by more than 25% in 2009. Singapore and Malaysia, the economies most closely integrated in global production networks, were hit hardest by the crisis. Indonesia had less impact of GFC because in this country domestic trade-driven is reveals strong (Emmers and Ravenhill 2011). Whereas, Australia experienced only a modest retraction in the effect of GFC (see Figure 2.6).

This thesis examines the impact of Global Financial Crisis (GFC) 2007-2009 on the key sub-categories of risk disclosure via a longitudinal data set of listed manufacturing companies 600 annual reports in four countries' (Australia, Indonesia, Malaysia, and Singapore). An examination of the manufacturing sector is important as based on the data base from World Bank (2011) the value added to the GDP from this sector in these four countries are high (Australia 29%, Indonesia 47%, Malaysia 55%, and Singapore 26%). Another reason to choose the manufacturing sector is that it represents an important nonfinancial sector that faces a comprehensive set of risks to be managed (Dobler et al. 2011).

This study is important as it helps us judge the impact of the GFC and other key factors upon the extent of risk disclosures in this weak economic timeframe. The primary research questions of this study are to

explain the extent of risk disclosure in five key major categories, and to explore the predictors of such communication.

1.3 Research Questions

This thesis aims to identify one aspect of 'corporate social reporting' that of the communication of key risk factors experienced by a company. It identifies the level of voluntary risk disclosures (measured and labeled as RDI), as well as the five key sub-components (business, strategy, operating, market, and credit risk disclosure), for 600 firm years' annual report data consisting of 200 manufacturing listed companies' annual reports for fiscal year-ends ranging from 2007 to 2009. The reports include 50 annual reports of manufacturing companies per country, listed in the stock exchanges of Australia, Indonesia, Malaysia, and Singapore[3] over the turbulent global financial period of 2007-2009.

The key predictor variables utilized in this research are country, company size, managerial ownership and board independence. The primary research questions of this study are:

1) *What is the extent of manufacturing listed companies' risk disclosures in annual reports?*
2) *To what extent have such manufacturing listed companies' risk disclosures changed over time?*
3) *What are the factors explaining the level of risk disclosures?*

This thesis captures details of disclosure items within the voluntary risk disclosure with a comprehensive risk disclosure index (RDI) checklist, adapted with several key predictor variables used to predict the extent of such communication over time in annual reports of Southern Asia Pacific (Australia, Indonesia, Malaysia, and Singapore) manufacturing listed

[3] Indonesia, Malaysia, Singapore, and Australia represent countries in the Asia Pacific region affected by the economic crisis during 2007-2009. These four countries show quite different levels of impact from the global economic crisis (see Figure 2.6 in Chapter 2 for details).

companies over the period of 2007-2009. This theme dovetails nicely with a stream of literature that documents the significant effect of country, size, managerial ownership and board independence on disclosure practices (Meek et al. 1995; Kanto and Schadewitz 1997; Williams and Tower 1998; Tower et al. 1999; Gelb 2000; Chen and Jaggi 2000; Marshall and Weetman 2002; Soewarso et al. 2003; Eng and Mak 2003; Cheng and Courtenay 2006; Bailey et al. 2006; Linsley and Shrives 2006; Atan and Maruhun 2009; Baek et al. 2009).

In the agency theory perspective, management in manufacturing companies often plays an organizational culture development role to mitigate potential agency problem. Agency theory may well fit better in a manufacturing company settings because it is easier to monitor performance (Noreen 1988). Agency theory is utilized in this thesis to offer insights into manufacturing listed companies' risk disclosure practices; particularly to ascertain whether country, company size, managerial ownership and board independence lead to an increased Risk Disclosure Index (RDI). The data set is the annual reports from 200 manufacturing listed companies on the Australian Stock Exchange (ASX), Indonesia Stock Exchange (IDX)[4], Malaysia Exchange (MYX)[5], Singapore Stock Exchange (SGX)[6] over a three year period (2007-2009). It is anticipated that the findings of this thesis will shed more light on the four countries' risk disclosure practices.

[4] In 2007, the Surabaya Stock Exchange was merged into the Jakarta Stock Exchange. As a result, the Jakarta Stock Exchange (JSX) changed its name to the Indonesia Stock Exchange (IDX).

[5] The Malaysia Exchange was known as Bursa Malaysia in the previously known Kuala Lumpur Stock Exchange (KLSE). The Kuala Lumpur Stock Exchange became a demutualised exchange and was re-named as Bursa Malaysia in 2004.

[6] SGX was formed on December 1, 1999, following the merger of the Stock Exchange of Singapore (SES) and the Singapore International Monetary Exchange (SIMEX).

1.4 Corporate Risk Disclosure and Agency Costs

In the agency relationship between manager (agents) and shareholders (principals) there is separation of ownership and control. Principals want agents to act to maximize the principal welfare (Jensen and Meckling 1976). A major issue is the information asymmetry between shareholders and managers that some information may be given but some may be withheld (Marshall and Weetman 2002). On the others hand, agents are assumed to have incentives to disclose information voluntarily, mainly driven by rational agents' self-interest for example regarding their reputation and remuneration (Healy and Palepu 2001). Disclosures can reduce the cost to analysts of gaining firm information and will increase analysts following the firm (Lang and Lundholm 1996). Hill and Short (2009) suggest that risk disclosures will reduce asymmetry information on firms. In addition, disclosures can reduce estimation risk to better avoid market failure and increase market liquidity, leading to more efficient capital markets (Healy and Palepu 2001).

Voluntary disclosure studies have received considerable attention in the accounting literature in recent years (Gray et al. 1995; Healy and Palepu 2001; Einhorn 2007; Wang et al. 2008). Voluntary disclosure can change the investors' expectation about the value of the firm (Einhorn 2007). A firm's decision to provide more voluntary disclosure is possibly as a reaction to globalization, innovation or changes in business and capital market backgrounds (Healy and Palepu 2001). Spence (1973) indicates that additional information can be used to lessen information asymmetry problems, including moral hazard and factors driving up costs.

A better level of risk communication allows capital market participants to be aware of potential material changes and, in doing so, disclosures can reduce agency costs. Arguably, the disclosure of information about risk will improve stakeholders' understanding of the company. This higher level of transparency will greatly ease the task of interpreting the risks of

the company by external users (Marshall and Weetman 2002; Cabedo and Tirado 2004; Taylor 2008; Hill and Short 2009).

A company must take responsibility for accountability of not only their finance performance but also their social performance (Mirfazli 2008); there are clear risk factors for both aspects of the company's activities. This thesis's selected time span using the 2007-2009 financial years is important due to the impact of the Global Financial Crisis (GFC) to better understand the extent of risk disclosures communication over an economically challenging economic timeframe.

1.5 Significance of the Research

This thesis is very important in that it contributes to the literature in a number of ways. Firstly, it provides insights into the risk disclosure practices. It will help stakeholders (especially investors and shareholders) to assess the risk disclosures for Australian, Indonesian, Malaysian, and Singaporean manufacturing listed companies. Secondly, by examining the impact of the variables of country, company size, managerial ownership and board independence using the Risk Disclosure Index (RDI) within annual reports for the year 2007, 2008, and 2009, this thesis's findings will assist stakeholders in obtaining a better understanding about risk disclosures. Thirdly, it contributes to the accounting literature by testing agency theory's ability to explain risk disclosure. Fourthly, there is lack of risk disclosure studies in manufacturing companies, especially in these four sample countries. Fifthly, this thesis will be one of the first to examine the impact of the global financial crisis 2007-2009 on disclosure via a longitudinal data set. Lastly, there is a dearth of research on disclosure risk using sample countries with different economic scenarios.

1.6 Assumptions and Limitations

Similar to other quantitative empirical studies of corporate communication, this thesis has certain limitations and assumptions. It focuses only on voluntary risk disclosures of manufacturing companies. Risk disclosure related to the risk of each company's manufacturing phase detailed process (specific production details), in this thesis is not examined. Very few companies communicate each phase of the process; this means it is difficult to obtain detailed data. A second limitation is that the manufacturing companies sampled for this research are in different sub-fields of manufacturing, which may lead to difficulty in explaining differences between corporate business risks. However, the sole focus on one industry category (manufacturing) is considered a major strength of this thesis research design. A third limitation of this thesis is that some upper level companies conducting their operations in the scope of the four countries (Australia, Indonesia, Malaysia, and Singapore) are not listed on the stock exchange of those countries. For example, Chevron has mining operations in Australia, but is not listed on the Australian Stock Exchange (Taylor 2008). Chevron also conducts operations in Indonesia, but is not listed on the Indonesian Stock Exchange. A fourth limitation that possibly can generate potential bias from the from the four different country comparative research sample is that due to data gaps this thesis does not examine the family controlling shareholder factor in the managerial ownership variable. Claessens et al. (2002) argue that especially in Indonesia corporations, their managers are usually related to the family controlling shareholder.

In conducting research across a number of countries, this thesis does not analyze any culture elements such as the Hofstede cultural dimensions. Potentially studies could consider cultural influences that may identify differences between countries' risk disclosures in more depth. There are numerous previous studies linking cultural influences in accounting disclosure studies. For example Williams (1999) and Haniffa and Cooke (2002) used culture testing based on Hofstede logic however such

approaches are often highly criticized by authors due to measurement and conceptual issues. For example Baskerville (2003) criticized Hofstede culture variable in cross national studies in accounting research arguing such an approach can led to the misleading explanatory factors in accounting practices partly because Hofstede approach is at odds with ethnographic analyses such as the universalist approach in anthropology and sociology. Finally this thesis does not examine the multitude of other macro factors to describe the level of risk disclosure.

1.7 Glosarry of Key Terms

This section highlights the definitions of key concepts that are used extensively throughout this thesis. These are summaried below in Table 1.1.

Table 1.1 Glossary of Key Terms

Risk	"Risk is defined as the possibility that the actual input variables and the outcomes may vary from those originally estimated… risk is usually used in the context of a potential hazard or the possibility of an unfortunate outcome resulting from a given action, intrinsically risk may be either positive or negative" (Remenyi and Heafield 1996, P.349)
Risk Disclosure	"If the reader is informed of any opportunities or prospect, or of any hazard, danger, harm, thread or exposure that has already impacted upon the company or may impact upon the company in the future or of the management of any such opportunity, prospect, hazard, harm, threat or exposure" (Linsley and Shrives 2006, P.389).
Risk Disclosure Index (RDI)	The dependent variable in this study is the Risk Disclosure Index (RDI). To measure the level of risk disclosure practices of these four countries' manufacturing listed companies, this thesis use a 34-item Risk Disclosure Index (RDI); a continuous dependent variable. This research adopts a researcher-constructed risk disclosure index to create an index measuring the extent of risk disclosure by listed firms. This benchmark set is based on an extensive list of business, strategy, operating, market and credit voluntary risk disclosure items from key past studies.
Agency Theory	"A contract under which one or more person (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent" (Jensen and Meckling 1976, P.308).

1.8 Overview of the Thesis

This thesis is organized as follows. Chapter 1 provides an overview of the study, including the introduction, background, research objectives and questions, significance and contribution of the study, assumptions and limitations, and the below outline of the entire thesis. Chapter 2 focuses on the myriad of factors potentially influencing the accounting environment in these four countries. Chapter 3 reviews the literature on agency theory, and links disclosure with country, company size, managerial ownership, board independence, and relevant prior empirical research. This leads to the development of hypotheses. Chapter 4 details the research methodology and design. This chapter describes data sources, the variables (dependent, independent, and control) in the research, and specific methods to test the hypotheses - the constructions and application of the disclosure index and measurement and testing of independent and control variables. Chapter 5 conveys the descriptive statistics for key variables. Chapter 6 reports the statistical analysis of the independent variable predictors hypothesized to be associated with risk disclosure patterns. Chapter 7 documents the additional analysis conducted. Chapter 8 concludes the thesis with a summary of key findings, limitations and assumptions, implications and suggestions for future research.

CHAPTER 2
ACCOUNTING ENVIRONMENT IN AUSTRALIA, INDONESIA, MALAYSIA, AND SINGAPORE

2.1 Overview

Chapter 1 provides an overview of the entire thesis. It offers the purpose and offers the research question of this thesis. Chapter 1 also states the use of agency theory in explaining voluntary risk disclosure practice in manufacturing companies in the four countries (Australia, Indonesia, Malaysia, and Singapore) in the dynamic time span of the Global Financial Crisis (GFC) 2007-2009. Chapter 2 focuses on the accounting environment and the background of political, economic, and social factors in these four countries. The risk issues for these four countries and the differing impact of Global Financial Crisis (GFC) 2007-2009 time period are also discussed.

2.2 Asia Pacific Region

Asia Pacific is the region where the four countries (Australia, Indonesia, Malaysia, and Singapore) are located. They can be regarded as the four major countries in the South East Asian[7] region including Australia in terms of economic growth, social and political development.

Impressive economic performance in the last three decades is witnessed in numerous countries in the Asian continent, especially in the East Asian region. Rapid GDP growth is observed in China, India and also the major East Asian countries economies such as Indonesia, Korea, Malaysia, Singapore, Taiwan and Thailand since 1960 until now. The standard of life in the East Asian region is moving toward the western developed industrial countries' norms like U.S and U.K (Collins et al. 1996). The success of East Asia is associated with

[7] Australia is part of 'greater' Asia geographically (Jupp 1995).

government policy in microeconomic activity leading to increased productivity and this region is seen to be a market friendly region (Collins et al. 1996). Bloom and Findlay (2009) label the growth performance as the 'East Asian Miracle'. Economic factors are improved by the trade openness, high saving rates, human capital accumulation, micro economic policy and also changes in demographics such as increases in the working age and increases in women participation.

Asia Pacific is a region worthy of discussion because it has many countries with high levels of plurality (see Table 2.1). This region greatly affects global worldwide trade (Elek 1992; Higgott and Stubbs 1995; Dent 2010). In the context of economic globalization, deepening of intra firm trade, foreign direct investment, and the exchange of labor between head office and branch office is picking up speed in the Asia Pacific region. A company's branch office may be located in others countries leading to greater interdependence between developed and developing countries in the Asia Pacific region (Harris 1994; Lo and Marcotullio 2000).

The World Bank database, using data on GDP per capita, shows that the four sample countries have different economic scenarios. Australia and Singapore are in a fundamentally different economic level from Indonesia and Malaysia. It could be argued that Australia and Singapore are developed markets, while Malaysia and Indonesia are emerging markets (Saudagaran and Diga 1997b).

There are several organizations established to promote bilateral cooperation between countries in the Asia Pacific region. For example the Asia Pacific Economic Cooperation (APEC) began in 1989 with policies to improve economic sustainability in the Asia Pacific region. In terms of globalization, policies on harmonization[8] are deemed

[8] The term harmonization in this thesis is considered to have the same meaning as the newer used term convergence.

necessary to mediate the problem of radical differences[9] in the legal and administrative dealing with trade issues (Elek 1992). Further, a study by Taplin and McGee (2010) reveal that some countries in the Asia Pacific region work well together to face the risk of climate change through the Kyoto protocol implementing partnerships for common needs among countries.

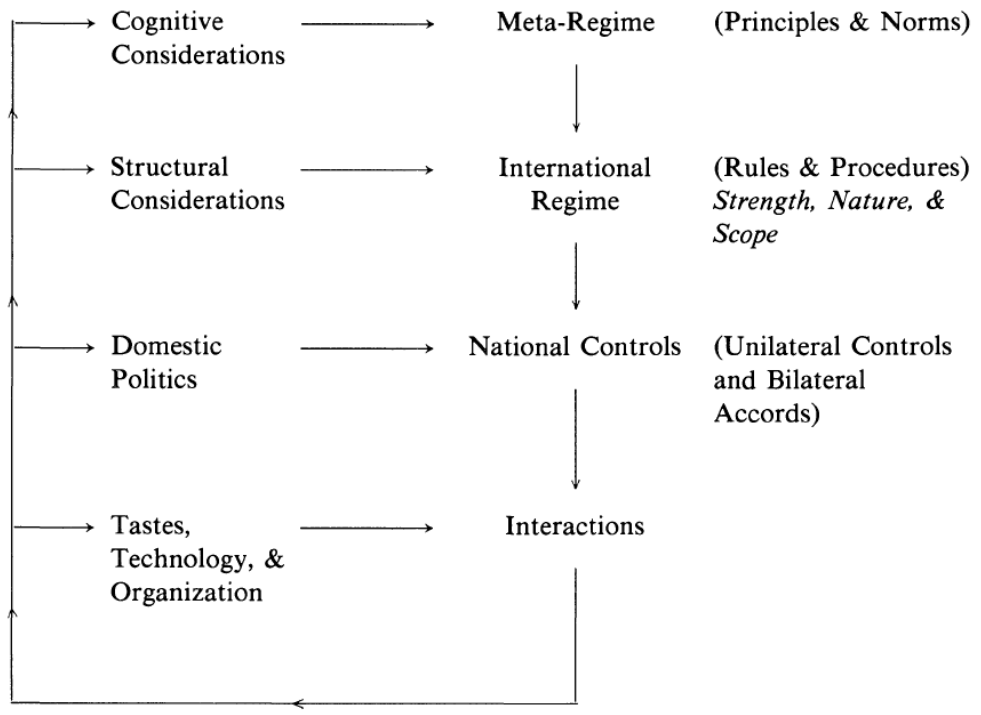
In the South East Asian region there is also an important regional organization namely ASEAN (Association of Southeast Asian Nations) with the original members being Indonesia, Malaysia, Philippines, Singapore and Thailand (three of the four thesis sample countries). ASEAN has several major programs such as implementing the Preferential Tariff Arrangement (PTA) project for large scale production-sharing for the ASEAN market. The industrial complementation scheme (improving supply networks), seeks to build up sub regional groups, for example the growth triangle involving Singapore, Johor state of Malaysia, and Batam island in Indonesia (Yamazawa 1992). Another future project is the ASEAN Free Trade Area (AFTA) in 2020 is envisioned to attract more investors in this region (Ravenhill 2003). ASEAN now has 10 member[10] countries with a goal of strengthening regional economic integration in this region through mutual and beneficial interdependence (Webber 2001; Ravenhill 2003; Beeson 2003; Tan 2011).

In Figure 2.1 a framework offered by Aggarwal (1993) discusses a country's trade in which the principles and norms are connected with the rules and procedures of international regimes.

[9] These differences include investment rules, tax concessions, subsidy rules and so on. Regional harmonization or mutual recognition of policies, regulations and standards in the APEC region would lead to reduction of these differences (Elek 1992).

[10] ASEAN member are: Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam (ASEAN 2012).

Figure 2.1 A Framework to Analyze Economic Trade



Source: Adapted from Aggarwal (1993, P.1031).

For example, the World Trade Organization (WTO) program on General Agreement on Tariffs and Trade (GAAT) can be implemented by domestic politics via unilateral controls and bilateral accords such as APEC or ASEAN. Interaction among countries can thus happen if there is similar tastes or similar technology or similar organizations (Aggarwal 1993). Dent (2010) posits that within the scope of trade cooperation in the Asia Pacific region, it is necessary to consider convergence / harmonization, and transformation in terms of free trade arrangements. Helbe, Shepherd, and Wilson (2009) note the importance of transparency in Asia Pacific region. Moreover, Saudagaran and Diga (1997a) state that harmonization (now better known as convergence) of accounting rules in the regional area is crucially important in order to reduce differences in accounting practice and help users better understand companies' annual report.

The macroeconomic framework in Figure 2.1 can be transposed to an accounting policies framework to describe and explain the risk disclosure practice via a global or regional global perspective. If more specifically focused on risk disclosure practices in Australia, Indonesia, Malaysia, and Singapore it can be utilized to overview risk information communication. Such disclosure practices may be affected by the similarity of tastes, technology and organization in the specific countries' environment.

2.3 Selection of Countries, Industry and Years

2.3.1 Why These Four Countries?

The major underlying reasons for the specific selection of these four nations are as follows:

1. Each country is a member of the Asian Pacific Economic Corporation (APEC) group; the organization with a spirit of cooperation (see Williams 1998). This thesis focuses on the southern region of the Asia Pacific representing important different characteristics (economic levels, language, accounting heritage, etc).
2. These four countries have experienced vastly different economic experiences during the 2007-2009 GFC time period.
3. There is an established stock exchange in each sample country requiring listed companies to publish their annual reports.
4. English version annual reports are available in each country.
5. There is a healthy comparative element with Australia and Singapore considered as developed markets, and Indonesia and Malaysia as emerging markets (Saudagaran and Diga 1997b).
6. Australia, Indonesia, Malaysia and Singapore have implemented or are moving quickly towards full IFRS adoption (Astami and Tower 2006; IASPlus 2012).

There are currently 21 countries[11] APEC members (APEC 2011). APEC is an organization unifying the economic cooperation in the Asia Pacific region representing the diversity of political, economical, social and culture aspects among its countries' members. The country sample selection would ideally be able to represent differences in terms of politics, economics, business environments, organizational attributes, social, and cultural factors. Overall, the countries chosen are: (1) Australia, (2) Indonesia, (3) Malaysia, (4) Singapore representing the APEC countries member which are in the southern Asia Pacific region which have clear differences in many areas (see Table 2.1).

Table 2.1 highlights the different in these four countries in terms of geography, economic development, colonial history and type of legal system.

[11] APEC member are: Australia, Brunei Darussalam, Canada, Chile, People's Republic of China, Hongkong China, Indonesia, Japan, Republic of Korea, Malaysia, Mexico, New Zealand, Papua New Guinea, Peru, The Philippines, Russia, Singapore, Chinese Taipei, Thailand, The United States and Viet Nam (APEC 2011).

Table 2.1: Key Country Factors

Environment factors	Year			
	2006	2007	2008	2009
Population (million persons)				
Australia	20.87	21.26	21.73	21.95
Indonesia	222.75	225.64	228.52	231.37
Malaysia	26.83	27.19	27.54	27.89
Singapore	4.59	4.84	4.98	5.07
GDP per capita (current US$)				
Australia	36,203	40,660	48,348	42,131
Indonesia	1,586	1,859	2,172	2,272
Malaysia	5,887	6,900	8,066	6,909
Singapore	33,019	38,645	39,136	36,758
GDP per capita growth (annual %)				
Australia	1.6	1.9	1.7	-0.8
Indonesia	4.3	5.2	4.9	3.5
Malaysia	3.9	4.7	2.3	-3.3
Singapore	5.6	4.3	-3.8	-3.7
Inflation, average consumer prices (% change)				
Australia	3.5	2.3	4.4	1.8
Indonesia	13.1	6.0	9.8	4.8
Malaysia	3.6	2.0	5.4	0.6
Singapore	1.0	2.1	6.6	0.6
Land area (1000 sq.km)				
Australia	7,617			
Indonesia	1,919			
Malaysia	330			
Singapore	1			
Capital market system				
Australia	Capital market equity funds			
Indonesia	Mixed equity and credit funds			
Malaysia	Capital market and equity funds			
Singapore	Capital market equity funds			
Number of Companies Listed in Country's Stock Exchange				
Australia/Australian Stock Exchange	2181			
Indonesia/Indonesia Stock Exchange	451			
Malaysia/Bursa Malaysia	830			
Singapore/Singapore Stock Exchange	809			
Number of Manufacturing Companies Listed in Country's Stock Exchange				
Australia/Australian Stock Exchange	309			
Indonesia/Indonesia Stock Exchange	101			
Malaysia/Bursa Malaysia	219			

Singapore/Singapore Stock Exchange	106
Colonial history (period of colonization)	
Australia	Britain (1788-1901)
Indonesia	Holland (17th century – 1945)
Malaysia	Britain (18th century – 1957)
Singapore	Britain (1819 – 1965)
Type of legal system	
Australia	Common Law country
Indonesia	Civil Law country
Malaysia	Common Law country
Singapore	Common Law country
Main relegion	
Australia	Christianity
Indonesia	Islam
Malaysia	Islam, Confucianism, Buddhism
Singapore	Confucianism, Buddhism, Taoism, Islam, Christianity, Hinduism

Sources: World Development Indicators database September 2011 (World Bank 2011) are accessed from http://worldbank.org (accessed on 28 October 2011). The International Monetary Fund, World Economic Outlook Database April 2010 (IMF 2010) are accessed from http://www.imf.org (accesed on 25 October 2011), and other source such as Wikipedia (2011) http://www.en.wikipedia.org/wiki/Singapore (accesses on 6 December 2011), Orbis database (Orbis 2011) are accessed from http://databases.library.curtin.edu.au (accessed on 28 March 2011). Tabalujan (2002) and Astami (2005).

From Table 2.1 it can be concluded there are key differences in the four sample countries, for example population, Indonesia has a massive population base with 231 million people in 2009. This is far different from Singapore which has only a small population of 5 million people in 2009. While Malaysia has a population of 28 million and Australia 22 million people in 2009.

In terms of inflation, in 2008 (compared with 2007 and 2009) seems to be the highest year of inflation in the four country sample. In 2008, Indonesia has the highest inflation level, followed by Singapore and Malaysia and Australia have the lowest inflation level in the four country sample. There is a huge geographic size difference in the four country sample. Australia is the largest, amounting to 7,617,000 sq.km followed by Indonesia, and Malaysia, and Singapore has the smallest region in that it only has an area of approximately 1,000 sq.km. The primary religion in the four countries also varies. The main religion in

Australia is Christian, in Indonesia it is Islam, in Malaysia various major religions exist namely Islam, Confucian, and Buddhist with the former dominating. Singapore is more diverse, the major religions in Singapore are Confucian, Buddhist, Taoism, Islam, Christian and Hinduism.

There are also different financial system practices in each of these four countries. For instance, Australia, Malaysia, and Singapore have an extensive capital market equity fund financial system while Indonesia has more of a mixed equity and credit fund system (Astami 2005).

Nobes (1998), summarizes 17 possible reasons from previous studies seeking to explain why accounting practices differs across countries. These possible factors are: nature of business ownership and financing system; colonial inheritance, invasions, taxations; inflation; level of education; age and size accountancy profession; stage of economic development; legal systems; culture; history; geography; language; influence of theory; political systems, social climate; religion and lastly major natural accidents. He admits that not all of these 17 factors are necessarily strong explanatory variables to explain international differences in financial reporting in each specific country.

This thesis argues that four of these 17 factors are the most critically important because they better explain accounting differences or are likely to have a more direct effect on accounting practices in the four sample countries (Indonesia, Australia, Indonesia, Malaysia, and Singapore). These four factors are: nature of business ownership and financing system; colonial inheritance; legal systems and stage of economic development. This thesis also adds a fifth possible factor namely corporate governance (board system) practice as governance issues are now higher profile in the last ten years (Ryan et al. 2010). The board system is an important proxy of corporate government as Beiner et al (2004, P.327) state that "the board of directors is one of

the most important corporate governance mechanisms ensuring that managers pursue the interests of shareholders. Its task is to monitor, discipline, and remove ineffective management teams".

These five factors are place in two categories in this thesis. These are: 1). Firm specific characteristics and 2). Country differences (see Sections 2.4.1 and 2.4.2 for expanded coverage).

2.3.2 Why the Manufacturing Industry?

The reason why this thesis chooses manufacturing industry as the sole sample focus is because manufacturing companies are seen as implementing an integrated process that convert materials into goods (see Drucker 1990). Dobler et al. (2011) in their risk disclosure study investigates the manufacturing industry and argues this sector is a good choice because it represents a nonfinancial sector that faces a comprehensive set of risks to be managed. Manufacturing companies have longer processes, more complex activities, and have more business risks in the activities than most other firms. Arguably, research scrutinizing manufacturing firms effectively tests agency theory ability to predict the level of risk disclosures.

2.3.3 Why the 2007-2009 Time Period?

To enhance the analysis, the years selected in this thesis are the 2007-2009 financial periods. Those three years encompass the impact of the global economic crisis situation faced by most countries in the world (Kenc and Dibooglu 2010; Zhang et al. 2010; Mishkin 2011).

The financial crisis of 2007–2009 started as a credit crisis in July 2007 in the U.S. spread to other countries and brought the global financial system to a perceived large-scale crisis (Kenc and Dibooglu 2010). The crisis resulted in a recession in a number of advanced economies, the developing economies and emerging markets were also affected, but the impact varied across countries and regions. Economies

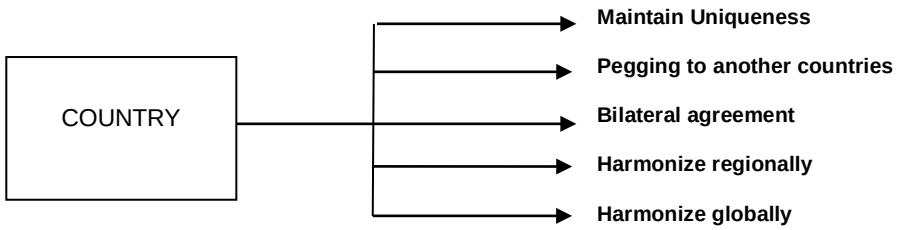
worldwide slowed during this period as credit tightened and international trade declined (Claessens et al. 2010).

The four sample countries are affected by the global crisis in various ways. This thesis analyses whether there are key differences between countries and years for risk disclosure.

2.3.4 Accounting Standard Setting in these Four Countries

Figure 2.2 highlights possible links of a country's policy and its alignment to its accounting rules and its collaboration with other countries. These policy options could be unique, or pegged to another country or integrated through a bilateral agreement; all of the possibilities could lead to the accounting harmonization / convergence regionally or globally (Saudagaran and Diga 1997a).

Figure 2.2 Country Influences on Accounting Harmonization / Convergence



Source: Adapted from Saudagaran and Diga (1997a, P. 6)

In terms of accounting harmonization/convergence, these four countries are all member of International Accounting Standard Board (IASB) which have implemented or are moving quickly towards full IFRS adoption.

The principal sources of accounting standards in the four countries (Indonesia, Malaysia, Singapore, and Australia) are virtually identical due to the international convergence with International Financial Reporting Standards (IFRS) (Astami and Tower 2006; IASPlus 2012). Many countries around the world have recently moved to IFRS or are in the process of adopting IFRS with the expected benefit that the use of IFRS enhance the comparability of financial statements, improves corporate transparency and increases the financial reporting quality enhancing investors' benefits. IFRS are more capital-market oriented and more comprehensive, especially concerning disclosure than GAAP (Daske et al. 2008). IFRS refers to the entire body of International Accounting Standard Board (IASB) rules, approved by the IASB, IAS, the Standing Interpretation Committee (SIC) and its predecessor the International Accounting Standards Committee (IASC) (Astami and Tower 2006).

The four countries have historically evolved accounting standards in different ways. In Indonesia, the standard setting body is Komite Standar Akuntansi Keuangan (Committee on Financial Accounting Standards) and there are additional disclosure requirements imposed by the Capital Market Supervisory Board (Bapepam) for listed companies. In the past, Indonesian accounting standards were adopted from U.S. accounting standards issued by the AICPA (Craig and Diga 1996). In more recent times Indonesian companies are in the process of ongoing convergence. A final decision about the ultimate target date for full compliance with IFRS is expected to be made in 2012 (IFRS 2012).

The Malaysian accounting standards are more centrally-based and have traditionally focused far more on accounting pronouncements of the International Accounting Standards Board (IASB). Malaysia promulgated its Financial Reporting Act in 1997. The Malaysian Accounting Standard Board (MASB) now has the authority to develop

and publish accounting and financial standards (Astami and Tower 2006). Since 1978, Malaysia has incorporating the adoption of International Accounting Standards (IAS) into Malaysia's local accounting standards. The Financial Reporting Foundation (FRF) and Malaysian Accounting Standards Board (MASB) bring Malaysia to full convergence with International Financial Reporting Standards (IFRS) by 2012. As of May 2012, all accounting standards applicable to entities other than private entities is converge fully with IFRS and apply the IFRS compliant framework or referred as the MFRS framework as a part of the IFRS convergence. This convergence is not affecting private entities that are currently applying the Private Entity Reporting Standards (PERS) (MASB 2008, 2011, 2012).

In Singapore, the Council on Corporate Disclosure and Governance (CCDG) is established by Singapore government to replace the Institute of Certified Public Accountants of Singapore as the primary accounting standard setter (Astami and Tower 2006). From 1 November 2007, the Accounting Standards Council (ASC) took over the task of the Council on Corporate Disclosure and Governance (CCDG) in the accounting standards. The creation of the ASC is to ensure consistency in accounting standards, comparison of financial statements and credibility and transparency of financial reporting in Singapore. The ASC authority is only for formulation and promulgation of accounting standards. The monitoring and enforcement of compliance with accounting standards is the responsibility of the respective regulators (ASC 2012b). The Accounting and Corporate Regulatory Authority (ACRA) is the respective national regulator for business entities and public accountants in Singapore. ACRA was formed as a statutory board on 1 April 2004, following the merger of the Registry of Companies and Businesses (RCB), and the Public Accountants' Board (PAB) (ACRA 2012). The Singapore accounting standards are also centrally-based and focused on accounting pronouncements of the International Accounting Standards Board (IASB) (Astami and Tower 2006). Most importantly, the Financial

Reporting Standards (FRSs) issued by the ASC are based on the IFRS (ASC 2012a).

In Australia, The Australian Accounting Standards Board (AASB) is responsible for developing and issuing Accounting Standards applicable to Australian entities with the Board's functions and powers are set out in the Australian Securities and Investments Commission Act 2001. Until December 1999, the former Australian Accounting Standards Board and the former Public Sector Accounting Standards Board (PSASB) developed standards based on the Corporations Law (AASB 2012). Australia now has mandated IFRS rules for all reporting entities reporting since 2005 (IFRS 2012). Australian accounting standards for profit entities are consistent with IFRS, with the exclusion of some extra disclosure requirements that are not dealt with under IFRS, for example detailed accounting requirements for general and life insurance contracts and local issues such as the accounting for Petroleum Resource Rent Tax (PWC 2012).

In summary, despite different starting points and different combinations of government and professional leadership, each of the four sample countries have implemented or are moving quickly towards full IFRS adoption.

2.4 Characteristic Influencing Accounting Disclosure

This thesis position is that there a two key categories to help explain risk disclosures. These are: 1) Firm specific characteristics and 2) Country differences. Section 2.4.1 details the importance of the first set of factors (firm specific characteristics). Section 2.4.2 then discusses country characteristics influencing accounting disclosure.

2.4.1 Firm Specific Characteristics

The three key firm specific characteristic highlighted in this thesis are: company size, managerial ownership, and board independence.

These three items are posited as important voluntary disclosure predictors under agency theory tenets. Each of these three are discussed in more depth below. Other firm specific characteristics potentially influencing accounting disclosure are treated as control variables. These are: leverage, age of business; auditor; and lastly profitability (see Section 4.5).

2.4.1.1 Company Size

Several prior studies document the influential effect of company size on disclosure practices (Kanto and Schadewitz 1997; Linsley and Shrives 2006; Atan and Maruhun 2009). The level of risk information disclosures is thought to be positively associated with company size. For example, Linsley and Shrives (2006) explore risk disclosures and company size. Their result supports the hypothesis that a positive correlation exists between the volume of risk disclosures and company size. This thesis adopts company size as a potential factor explaining the risk disclosures.

2.4.1.2 Managerial Ownership

This thesis also examines companies' managerial ownership in Australia, Indonesia, Malaysia and Singapore (see Section 3.7.3) because managerial ownership is considered as having an important influence in determining the nature of the agency problem in which both the agent (manager) and the principal (shareholder) are seeking to maximize their own self-interest (Jensen and Meckling 1976). Consistent with the results of most past agency theory studies which note a negative relationship between managerial ownership and the level of disclosure (Gelb 2000; Eng and Mak 2003) this thesis analyses managerial ownership as a potential factor explaining the companies' risk disclosures.

2.4.1.3 Board Independence

Due to the separation of ownership and control of a firm, an agency relationship provides scenarios for firm management to engage in opportunistic behavior that enhances their welfare at the expense of the firm (Jensen and Meckling 1976). Agency theory suggests that governance mechanisms such as monitoring by the board of directors can minimize divergences that arise from the separation of ownership and decision control (Fama and Jensen 1983). Shareholders, as beneficiaries of risk, need representation on the board that is independent of management to protect their assets (Cheng and Courtenay 2006).

Prior studies document a significant effect of board independence on disclosure practices (Chen and Jaggi 2000; Cheng and Courtenay 2006). This thesis adopts the level of board independence as a potential factor explaining risk disclosure

2.4.2 Country Characteristics Influencing Accounting Disclosure

Prior studies document the effect of country on disclosure practice (Dye 1985; Meek et al. 1995; Williams and Tower 1998; Tower et al. 1999; Jaggi and Low 2000; Marshall and Weetman 2002; Soewarso et al. 2003; Bailey et al. 2006; Dobler et al. 2011). This thesis posits country as a determinant factor explaining the association between risk disclosures (see Section 3.7.1). These country differences may be explained by their colonial inheritance, legal system, stage of economic development, and board structure as key factors potentially changing the relationship between country and disclosure practice.

2.4.2.1 Colonial Inheritance

The four countries studied in this thesis were colonized by European countries in the past centuries. Nobes (1998) argues that colonial inheritance factors can explain the differences or similarities between

accounting practices. Australia, Malaysia and Singapore are countries based upon the British system with their history of the colonialisation. In contrast, Indonesia is a former Dutch colony (Taplin et al. 2002; Astami and Tower 2006). As British colonies, Australia, Malaysia and Singapore have a good start in the legacy of a basic accounting system provided by British leadership in accounting development. These countries adopted British accounting values such as true and fair, prudence and professional judgment. On the other hand it is argued that Dutch failed to provide a good administration model with the professions deficient in their legacy of a basic accounting system in their ex-colonies such as Indonesia (Astami 2005).

2.4.2.2 Legal Systems

There are two broad classifications of legal systems applied in the nations around the world, there are common law and civil (also referred to as code) law systems (La Porta et al. 1997; La Porta et al. 1999; Jaggi and Low 2000; Ball et al. 2000). The civil law or code law or Romano-Germanic is based on statutes, codes, and also opinions of legal scholars. While, the common law is taken from English traditions which are formed from judges' opinions on specific issues and those decisions become precedents and become the basis of this law (La Porta et al. 1997; Jaggi and Low 2000). Accounting in terms of civil law systems may be more affected by high political influence occurring at the national levels. Governments establish and enforce national accounting standards in response to the need of major political groups such as labor unions, bank and business associations. Whereas in a common law system accounting practices are determined primarily in the private sector (Ball et al. 2000).

Jaggi and Low (2000) in their research of 401 companies from six countries belonging to common and civil law countries find that financial disclosures by companies from common laws countries are significantly higher compared to companies from civil law countries.

Ball et al (2000) argue that information asymmetry in common law countries is better resolved by timely public disclosure and financial statements than in civil law countries.

Table 2.2 reveals the differences in the country level classification of legal, financial and political economy institution in these four countries adopted from Bushman and Piotroski (2006). Australia and Singapore have low levels of state ownership, whereas Indonesia and Malaysia have high levels of state ownership. Australia ownership concentration is in the low level which is different with Indonesia, Malaysia and Singapore which have high levels of ownership concentration (see Table 2.2).

Table 2.2: Country- level Classifications of Legal, Financial and Political Economy Institutions

		Legal Origin	Judicial impartiality	Securities law	Sec.Law: Public enforce	Sec.Law: Private enforce	Risk of expropriation	State-owned enterprises	Tax burden	Bank vs market	Private bonds	Ownership concentrate	Insider Trading enforce
Australia	AUS	Common	High	High	High	High	High	Low	High	Low	High	Low	1996
Indonesia	IDN	Civil	Low	High	Low	High	High	High	Low	High	n/a	High	1996
Malaysia	MYS	Common	Low	High	High	High	High	High	Low	Low	High	High	1996
Singapore	SGP	Common	High	High	High	High	Low	Low	Low	Low	Low	High	1978

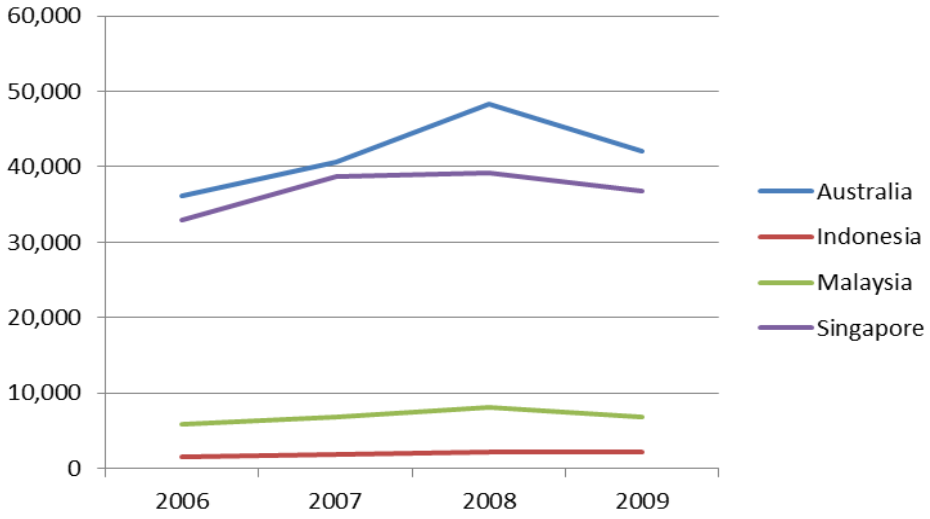
Source: Bushman and Piotroski (2006); Tabulated classifications reflect calendar year 2001 country-level attributes; For Indonesia private bond, data is not availbable (n/a).

2.4.2.3 Stage of Economic Development

The nature and level of economic growth and development may also affect accounting as a country changes. For example, a shift from agriculture to manufacturing will lead to new accounting problems (such as machinery depreciation, leasing, and so on). Economic growth is a major influence on accounting for instance in cases where in hyperinflation has been widespread to the extent that the alternative systems is at times needed (Radebaugh et al. 2006).

In terms of the economic conditions for the four sample countries, Figure 2.3 shows the GDP per capita from 2006 (before the GFC), to 2007-2009 (the GFC period).

Figure 2.3: GDP per capita (current US$)



Source: World Development Indicators database. September 2011.,http://worldbank.org (accessed on 28 October 2011).

Figures 2.3 (GDP per capita adapted from World Bank data in the four countries during the Global Financial Crisis (GFC)) shows that there are vastly different economic scenarios between Australia and Singapore as compared to Malaysia and Indonesia.

The data highlights that Australia and Singapore are more economically developed countries while Malaysia and Indonesia are emerging economies. It further reveals that the approximate income per person per year for Australian is US$36,203 in 2006 (prior to GFC) and the number continue to increase to the amount of US$40,660 and US$48,348 in 2007 and 2008 respectively while in the final GFC year of 2009 it decreases down to US$42,131. Such trends in income also happen in Singapore, although the level of income is a little bit lower than GDP per capita in Australia. GDP per capita in Singapore in 2006 is US$33,019 and increases up to 38,645 and 39,136 in 2007 and 2008 while in 2009 it decreases down to 36,758.

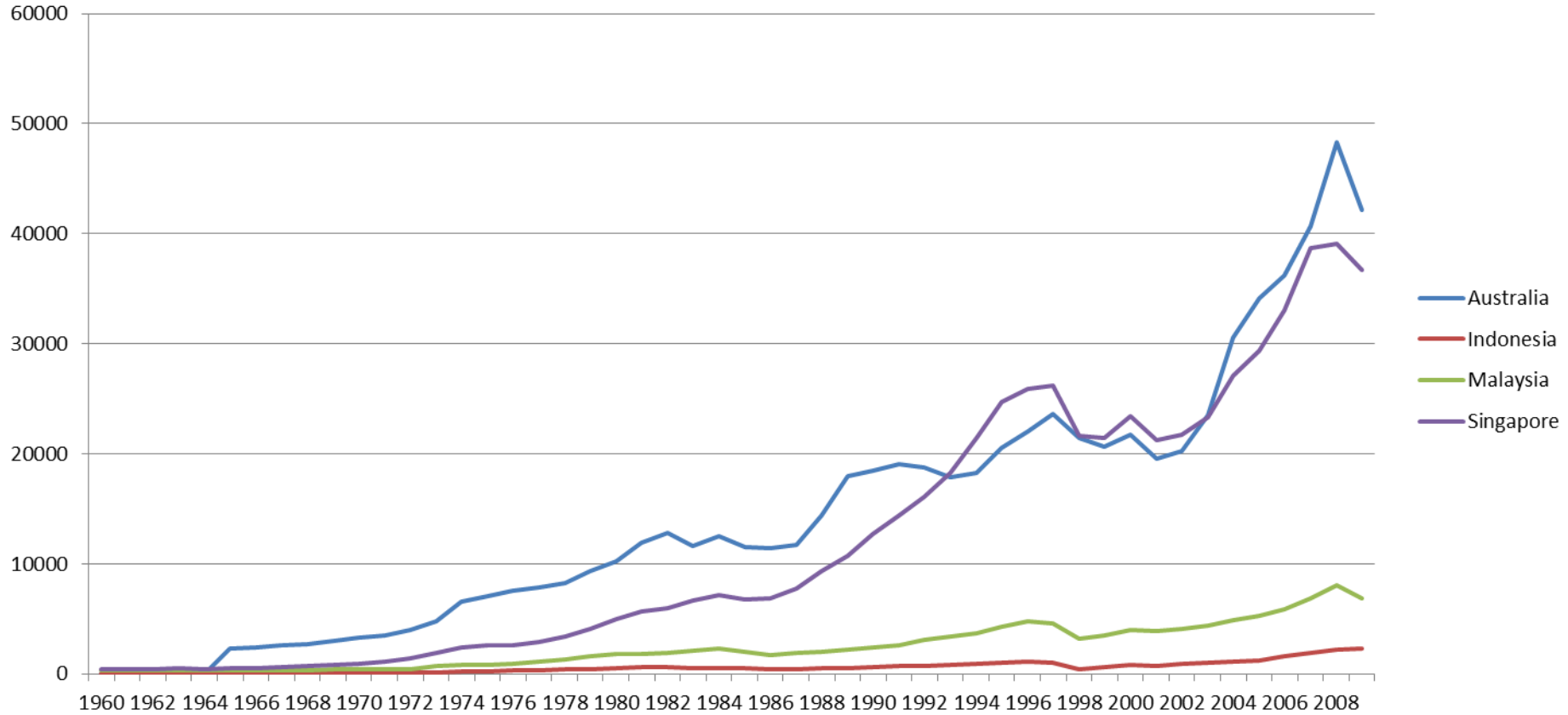
The GDP per capita in Malaysia in 2006 is far lower at the level of US$5,887 and increases to US$6,900 and US$8,006 in 2007 and 2008 and slightly decreases in 2009 to the level of US$6,909. Indonesia is the country with the lowest level of GDP per capita among the four sample countries. However, contrary to the trend in the other three countries, the GDP per capita in Indonesia continues to increase from 2006 to 2009 in the amount of US$1,586, 1,859, 2,172 and US$2,272 respectively.

Figures 2.4 and 2.5 (a-d) provide a longer term overview and Figure 2.4 features the condition of GDP per capita from 1960 until now. The trend summarized in Figure 2.4 reveals that in 1960s the GDP per capita of Singapore was almost at the same level as Malaysia and Indonesia. While since the 1970s it has grown rapidly and it reaches its peak in 1993 to 2002 when GDP per capita of Singapore was higher than Australia.

The longer trend of income per capita in the four countries from 1960 to 2009 shows fundamental differences in the economic scenarios between Australia and Singapore versus Malaysia and Indonesia (see Figures 2.4 and 2.5 (a-d). Figure 2.5a – 2.5d features the condition of GDP growth in these four countries from 1960 until 2009. As seen in

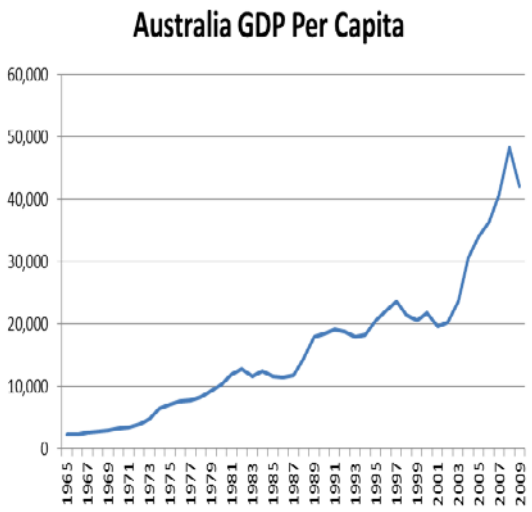
Figure 2.5 (a-d) in terms of the trend of GDP per capita growth from 1960 until 2009 indicates that these four countries' economic condition varies from time to time. For example Indonesia, Malaysia, and Singapore, economic growth decreases markedly in 1998 as an impact of Asian economic crisis. Whereas Australia suffered a recession in 1981-1983 as an impact of falling world metal prices (The Australian 2009).

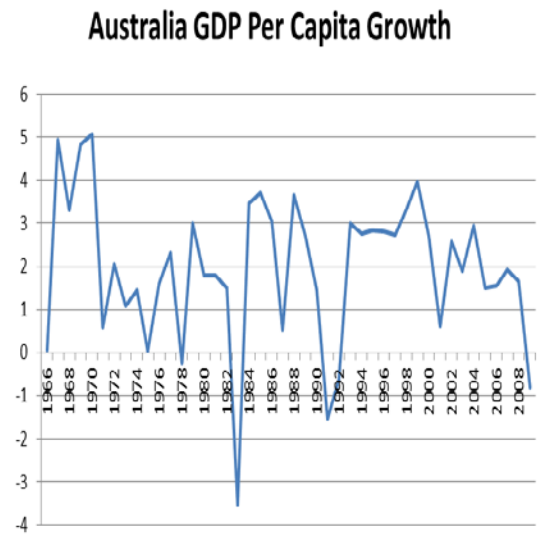
Figure 2.4: GDP per capita (current US$) 1960-2009



Source: World Development Indicators database. September 2011 accessed from http://worldbank.org (accessed on 28 October 2011)

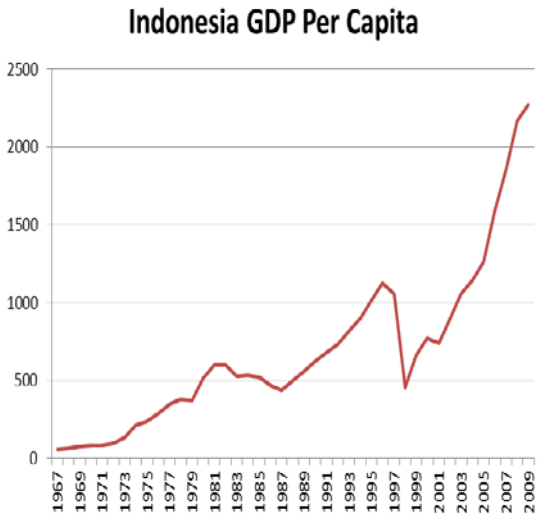
Figure 2.5a: Key Australia Economic Indicator





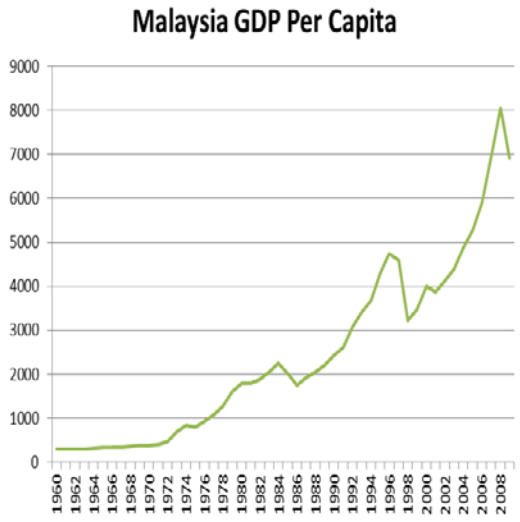
Source: World Development Indicators database. September 2011 accessed from http://worldbank.org (accessed on 28 October 2011)

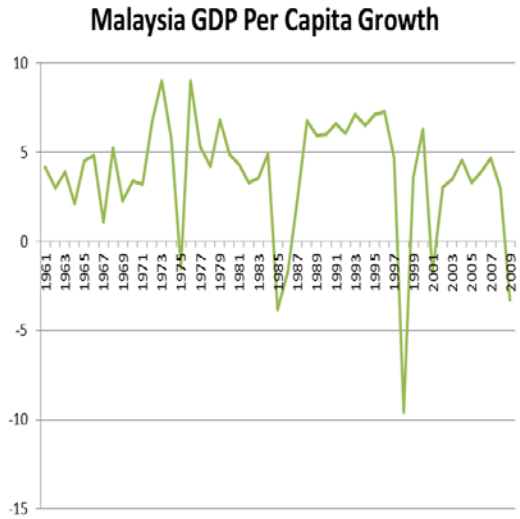
Figure 2.5b: Key Indonesia Economic Indicator



Source: World Development Indicators database. September 2011 accessed from http://worldbank.org (accessed on 28 October 2011)

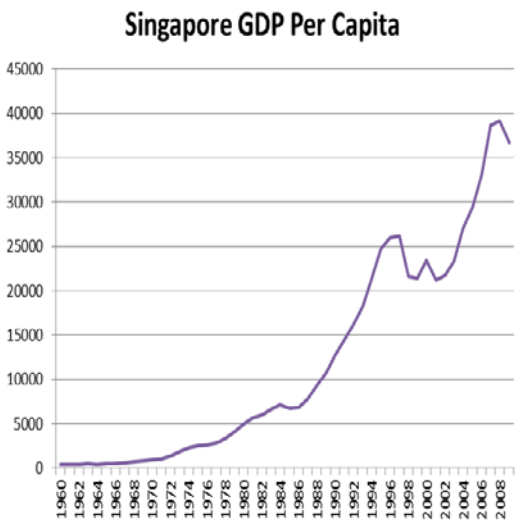
Figure 2.5c: Key Malaysia Economic Indicator

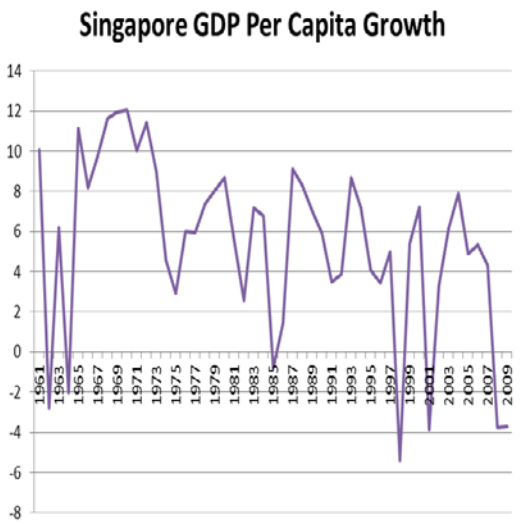




Source: World Development Indicators database. September 2011 accessed from http://worldbank.org (accessed on 28 October 2011)

Figure 2.5d: Key Singapore Economic Indicator

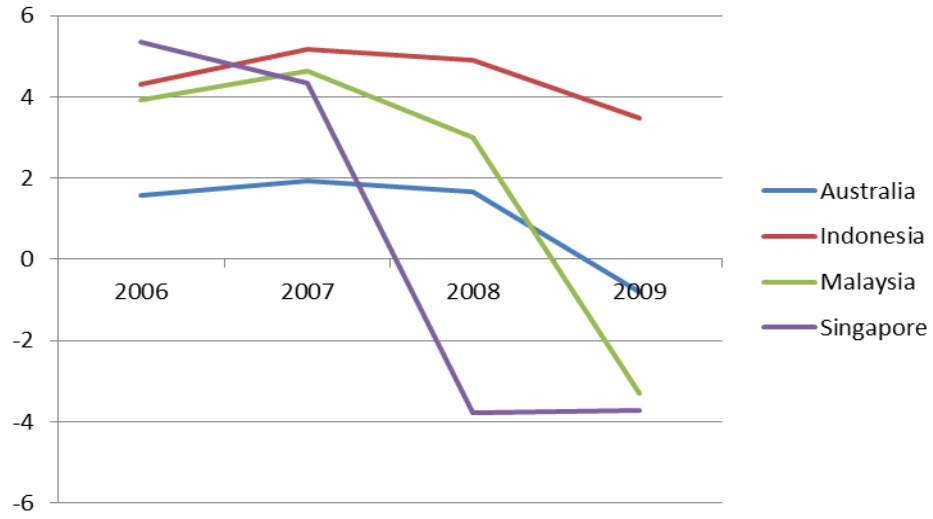




Source: World Development Indicators database. September 2011 accessed from http://worldbank.org (accessed on 28 October 2011)

Related to the impact of the Global Financial Crisis in the four sample countries, Figure 2.6 features the condition of the growth of GDP per capita in 2006 to 2009 as reflection of level of economic growth of these countries within the thesis sample time frame.

Figure 2.6: GDP Per Capita Growth (annual %)



Source: World Development Indicators database. September 2011 accessed from http://worldbank.org (accessed on 28 October 2011).

Figure 2.6 reveals that Singapore and Malaysia experiences a greater drop in economic activity during the GFC period than did Indonesia or Australia. Figure 2.6 shows that Indonesian GDP per capita growth remains quite robust with figures of 5.18%, 4.89% and 3.49% between 2007-2009 (World Bank 2011). Australia experiences only a modest retraction in growth from 1.93% in 2007 to -0.8% in 2009. Whereas, Singapore has significant economic decline for the same periods with a large fall of GDP of -3.72% in 2009. Malaysia starts better at the beginning of the crisis, but then falls substantially, with 4.65% growth in 2007, but this drops to 2.99% and -3.29 % in 2008 and 2009 respectively[12].

[12]This information is later used to do extra sensitivity analysis as the economic effect of Global Financial Crisis (GFC) which is categorized 0 if country experiences a smaller impact of GFC and 1 if country experiences a larger negative impact of GFC (see Section 6.6).

2.4.2.4 Corporate Governance (board system practice)

A comparison of the corporate governance system in Australia, Indonesia, Malaysia, and Singapore reveals fundamental differences for example in board system practice. Bebchuk and Roe (1999) suggests that the country governance system is linked to other factors. The governance system adopted by countries over the world through colonial system (Gevurtz 2004). The unitary system or one-tier board system is prevalent in Anglo-Saxon countries such as the US, UK and Commonwealth countries, while the two-tier system is commonly observed in the continental European economies and their former colonies (Gevurtz 2004). Camfferman and Cooke (2002, P.7-8) state that in unitary system "*de jure*, shareholders appoint the auditor, but *de facto*, it is the board…For other stakeholders, there is an impact on the firm, but their influences tend to be marginal." Whereas, the two-tier board system is more complicated, "There are two boards - a management board that manages and a second tier, a supervisory board that appoints the management board." (Camfferman and Cooke 2002, P.8). Australia, Malaysia and Singapore are common law countries and former British colonies are adopt the unitary board system, while Indonesia as civil law country and a former Dutch colony has a two-tier board system. In Indonesia[13] to complement BAPEPAM (The Capital Market Supervisory Agency), the Jakarta Stock Exchange (JSE) in 2000 issued a set of rules: Decision Letter of PT Bursa Efek Jakarta No: Kep-315/BEJ/06-2000, which was later amended by Decision Letter No: Kep-339/BEJ/07-2001, stating that publicly listed companies are obligated to fulfil the requirements by December 31, 2001 at the latest. These rules concerned the independence of the board.In Indonesia, the board structure follows a two-tier system: the board of commissioners (dewan komisaris) and the board of directors (direksi). The board of commissioners provides direction and supervises the board of directors in managing the firm (Siregar and Utama 2008).

[13] The country split between Indonesia versus other three countries is further explored in Section 6.6.

2.5 Risk Factors in These Four Countries

Several international organizations provide reports concerning risk which may happen in every country. For example the Economist Intelligence Unit (EIU) as an independent business within The Economist Group (media company) has been delivering business intelligence to their clients (entrepreneurs, financiers and government) since 1946 (EIU 2012a). Table 2.3 provides the four country risk rating analyst by the EIU.

Table 2.3: The Economist Intelligence Unit (EIU) Risk County Rating

RISK RATINGS	Australia		Indonesia		Malaysia		Singapore	
	Rating	Score	Rating	Score	Rating	Score	Rating	Score
Overall assessment	A	18	C	55	B	32	A	11
Security risk	A	18	C	57	B	29	A	4
Political stability risk	A	15	B	30	B	30	A	20
Government effectiveness risk	A	18	D	75	C	54	A	7
Legal & regulatory risk	A	10	D	72	B	40	A	8
Macroeconomic risk	B	25	B	30	B	25	B	30
Foreign trade & payments risk	A	11	C	43	B	21	A	4
Financial risk	A	12	D	63	A	17	A	4
Tax policy risk	A	19	C	44	B	25	A	6
Labour market risk	B	36	D	64	C	50	B	25
Infrastructure risk	A	16	D	72	B	34	A	3

Source: Economist Intelligence Unit, EIU (2012b) Note: E=most risky; 100=most risky

Table 2.3 reveals that overall Australia and Singapore are considered to have lower risk level than Malaysia and Indonesia. This thesis focuses on risk disclosure. Therefore the following section provides an overview about potential major risk factors in each of the four sample countries.

2.5.1 Australia

One major risk in Australia relates to the climate change risk. For example, Australia clearly suffers from the negative effects of climate change. The Australian average temperature in 2000-2009 is the hottest compared to the previous decade (IFRC 2010). Australia is thought to have greater risks from climate change than any other developed country. This is because Australia has a very large land mass and small population (Garnaut 2011)

Climate change effects in Australia is predicted to raise the risk of extreme events. The changes include greater occurrence (heatwaves, bushfire conditions, floods, droughts), greater strength (heatwaves, bushfire conditions, floods, droughts plus cyclones) and changes in distribution (average rainfall). Climate change will also affect the seasonal and daily patterns of rainfall intensity. The risk of drought is expected to increase in the mid-latitudes (southern Australia). A bigger flood risk is also projected as rainfall is concentrated into smaller spaces. There are also potential influences on agricultural output and ecosystems, and risks of a loss of stored carbon (for example, due to fire or drought) (Garnaut 2011).

Other risks in Australia as reported by the Australian Davos Connection in collaboration with KPMG (ADC and KPMG 2010), are:

- An ageing population, water scarcity;
- The risk of major Asian trading partners remaining subdued is a core economic risk for Australia;
- Instability in the Asia Pacific region, terrorism risk, security risk, and transnational corruption.

2.5.2 Indonesia

The United Nations Development Program (UNDP) has development programs focusing on reducing risk factors in Indonesia (UNDP 2011). These UNDP programs' in Indonesia concentrate on:

- Indonesian high unemployment and underemployment and high youth unemployment program;
- Reduction in the rates of poverty;
- Gender equality;
- National HIV/AIDS;
- Tuberculosis and Malaria; and
- Movement toward democracy.

There are also risks associated with climate change according to the report of United Nations Population Fund (UNFPA) in Indonesia (UNFPA 2011) which are:

- Climate change impacts on agriculture,
- Risk of drought,
- Changes in temperature and rainfall which have negative impact on rice and other food crops and also dairy cattle production,
- Incursion of coastal farmlands due to the rising of sea level,
- The increased risk of forest fires which effect risk of loss of biodiversity and possible extinction of some rare species,
- Risk of food scarcity,
- Risk of water resources, and
- Climate change risks to health at sub-national levels.

The International Federation on Red Cross and Red Crescent societies note that Indonesia also has a high risk related to natural disasters such as earthquakes, tsunamis, volcano eruptions, land slides and floods (IFRC 2010).

2.5.3 Malaysia

UNDP program notes the level of risk in Malaysia is often related to land drought, and strengthened Malaysia's energy security policy through a variety of project initiatives (UNDP 2011). Others risks in Malaysia

according to the Malaysia Millennium Development Goals (MDG) by UNDP (UNDP 2005) are:

- HIV/AIDS and tuberculosis,
- The effects of foreign workers in Malaysia, on health patterns,
- Risk of infant (and maternal) mortality among migrant communities, and
- Poverty and inequality.

2.5.4 Singapore

The International Federation on Red Cross and Red Crescent Societies report that Singapore is worried about the effect of deadly diseases. For example, in the recent decade the spread of H5N1 influenza virus, this is more commonly as 'bird flu' and other diseases such as SARS (severe acute respiratory syndrome). Both diseases demonstrated how dense urban living conditions provide the ideal breeding ground for new viruses in Singapore. Singapore's economy shrank two per cent in the first half of 2003 due to the effect of the H5N1 virus (IFRC 2010).

Other risks in Singapore reported in the Singapore country profile by the United Nation (UN 2002) are:

- The public health risk related with microbiological and chemical hazards in food,
- Health risks of workers unprotected to various hazards, such as silica, lead, cadmium, cobalt, tungstencarbide, benzene, trichloroethylene, and other organic solvents, and
- Risk of environmental disasters such as smoke haze and oil spills.

Overall, the above listed four countries risk factors increase the need for enhanced risk communication by listed companies in each of the four countries.

2.6 Summary

This chapter describes the accounting environment in the four countries and also defends the selection of countries (Australia, Indonesia, Malaysia, and Singapore), industry (manufacturing) and years (2007-2009) selected in this thesis. It also defines two key predictor categories of variables that could affect accounting practice in those four countries. These are: 1) Firm specific characteristics (company size, managerial ownership, and board independence) and 2) Country differences (colonial inheritance, legal system, stage of economic development, and board systems. This chapter also reviewed important risk factors for these four countries.

The next chapter reviews the literature concerning risk communication and agency theory tenets to evolve testable hypotheses.

CHAPTER 3
LITERATURE REVIEW

3.1 Introduction

Chapter 2 describes the accounting environment in the four countries. This chapter presents the literature review of the thesis and outlines findings from past empirical research into voluntary risk disclosure practice. Chapter 3 also gives an explanation of the use of agency theory as well as key aspects of past voluntary disclosure and voluntary risk disclosure studies.

The literature review provides a basis for understanding the area of research on voluntary risk disclosure. Four hypotheses are formulated to test the association between country, company size, board independence, managerial ownership and voluntary risk disclosure in a time span of 2007-2009 financial years, the core years of the global financial crisis.

Section 3.2 explains the adaption of the positivist paradigm in this thesis risk disclosure research. Section 3.3 reviews the literature on agency theory. Section 3.4 provides the link between voluntary risk disclosure and agency theory. Section 3.5 offers the past literature of voluntary disclosure. Section 3.6 evaluates the past literature of risk disclosure studies. Prior to discussing this past literature, an operational definition of voluntary risk disclosure is given for the purpose of this thesis leading to hypotheses development. Section 3.7 relates the literature on the association between country, company size, board independence, managerial ownership and voluntary risk disclosure, to risk disclosures and the development of hypotheses. Section 3.8 then summaries this chapter's key points.

3.2 Adaption of Positivist Paradigm

This thesis uses a positivist paradigm strand of agency theory. The concept of paradigm is the researcher's overall guides system (Guba and Lincoln 1994). Marková (1982, P.2) defines paradigmatic science as "the philosophical view and associated framework of some outstanding scientific achievement that determines future progress in that particular field." There are three prominent strands of social science paradigms: positivism, interpretative and critical theory. Peile (1994) describes the key characteristics of these three strands (see Table 3.1).

Table 3.1: Social Science Paradigms

	Positivism	Interpretative	Critical
Cosmological Assumptions (the universe as a totality)	Causal determined view of reality. The world is predictable. Fragmentary view of reality (reality can be understood as separate parts).	Knowledge is contextual and a symbolic social construction. Events can be explained and their meaning for people uncovered. Parts can only be understood in context.	All things are internally contradictory and are in a constant process of movement where all processes from a totality in which each process determines every other.
Ontological Assumptions (the essence of nature and human nature)	Behavior can be explained in causal, deterministic ways. It has a mechanic quality. People are manipulatable and controllable	Behavior is intentional and creative. It can be explained but is not predictable. People shape their own reality.	Human behavior is social and historic. People shape their own world but are shaped by it at the same time.
Epistemological Assumptions (knowing and how knowledge is generated)	Knowledge arises from experimentation and observation and is grounded in the certainty of sense experience.	Knowledge arises from interpretation and insight and is grounded by empathetic communication with the subjects of the research. Symbols, meaning and hidden factors are essential to understanding.	Knowledge arises through action and is rounded in the self-conscious action. Research goes beyond appearances to what is essential.

Ethical Assumptions	A separation between knowledge and values. Science produces knowledge. How it is used is a value, ethical, or moral question and is outside the concern of science.	Values are the subject of research. Moral or ethical relativism. Leads to disinterest in ethical issues or anarchistic individualism.	Knowledge and values cannot be separated. Committed to happiness and the emancipation of people from oppression.
Spiritual Assumption	Rejection of spiritual explanation or a clear separation between science and religion.	Relativism of spiritual beliefs. Such beliefs are important in the social construction of meaning.	The materialist rejects spiritual beliefs but they are compatible with the idealistic critical approach.
Political Assumption	The relationship aim between science and society is control. The value-free stance implicitly support domination by the established order. Mutually supportive with both high technology capitalism and centralized industrial socialism.	The relationship aim is empathetic communication. Implicitly conservative since there is no structural or historical analysis of society. Mutually supportive with a liberal society allowing individual freedom and self-determination.	The relationship aim is enlightenment. Explicitly change focused, seeking to challenge the present capitalist system. Supports a socialist or communist society.

Source: Adapted from Peile (1994), Suhardjanto (2008)

In considering the difference of paradigmatic context use by each research approach, Peile (1994, P.20) argues that “paradigms are not hard and fast sets of rules, …. They are, more correctly, loose and evolving frameworks for the ongoing production and resolution of problems. As such, their historical context is important”.

Hovenkamp (1990, P.817) states that a positivism methodology in the economics area is “a procedure by which one formulates a hypothesis and then tests its reliability by attempting to falsify it through empirical observation. To the extent that a hypothesis cannot be falsified, it is said to be robust, or predictive”.

Bryman (2012, P.35-36) define quantitative research as “a research strategy that emphasizes quantification in the collection and analysis of data and that entails a deductive approach to the relationship between theory and research, in which the accent is placed on testing of theories; has incorporated the practices and norms of the natural scientific model and positivism in particular; and embodies a view of social reality as an external, objective reality”.

This thesis seeks to provide insights into the voluntary risk disclosure practices, therefore the positivist approach is well matched with this kind of accounting research. This thesis thus adopts and utilizes the positivism research approach as can be seen in the shaded positivism column in Table 3.1 that knowledge is best acquired through observation. The key research questions in this thesis seek to detail ‘what’ is the level of risk disclosure and explain ‘why’ (explanation of prediction factors) in the Australian, Indonesian, Malaysian, and Singaporean manufacturing listed companies using a quantitative research methodology and statistical research methods. Such an approach is consistent with the positivist approach (see Table 3.1).

In previous agency theory studies with their positivist's themes, the common approach is to identify a policy and behavior in which agents and principals interest diverge and then to explore the agency problems. Most agency theory-positivist studies focus on the separation of ownership from management in companies (Eisenhardt 1989). Such an approach is consistent with the themes in this thesis. Accordingly, this thesis adopts and utilizes an agency theory-positivist research approach.

3.3 Agency Theory

Agency theory framework provides an ideal mechanism to assess manufacturing listed companies' voluntary risk disclosure practices. The focus is on corporate reporting in different manufacturing listed companies in Australia, Indonesia, Malaysia, and Singapore which are likely to be the subject of differing impacts of the global financial crisis when deciding to communicate risk disclosure policy voluntarily. The motivation of companies' management to disclose risk information has often been explained in the accounting literature using agency theory. In this thesis it is argued that differing countries, company size, board independence and managerial ownership may influence the voluntary risk disclosure decision.

Agency theory, derived from positivist accounting theory, is widely recognized as providing an important explanation of the relationship between principals and agents. Agency theory provides insights whenever the principal employs the service of an agent or agent to perform some activity on the principal's behalf. The main belief of agency theory is that the interests of the agent (manager) conflict with the interest of the principal (owner). The principal seeks to ensure that the agent operates in the principal's best interest (Ross 1973; Jensen and Meckling 1976).

Ross (1973, P.134) states that:

> the relationship of agency is one of the oldest and commonest codified modes of social interaction.

Jensen and Meckling (1976, P.308) define an agency relationship as:

> a contract under which one or more person (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent.

Jensen and Meckling (1976) postulate that if both parties to the relationship between agents and principals are seeking to maximize their own self interest then agents will not always serve in the best interests of principals. Agents may become opportunistic in behavior to maximize their own welfare. They may not always pursue opportunities in a search of the shareholders' wealth maximization interests.

The principals can limit agency problems by establishing incentives for the agents (agency costs) and by creating monitoring costs designed to control the behavior of the agents. In addition, in some situations principals will pay agents to expend resources (bonding costs, such as share options) to better guarantee that agents will not inflict financial loss actions or to ensure that the principals will be compensated if agents take adverse actions (Jensen and Meckling 1976).

In the context of the agency relationship, the problem of asymmetric information between agents (managers) and principals (shareholders) occurs because agents have an information advantage. Akerlof (1970) provides a description that information asymmetry is like purchasing a broken used car in a car dealer (in American such cars are called 'lemons') which later referred to as the 'lemons' problem. Purchasing a used car with minimum information makes the buyer unable to maximize their money in deciding to buy a car. Information asymmetry causes a moral hazard issue and creates a problem related to unwise decision making.

Shareholders, may only have limited ability to accurately evaluate managerial decision-making. Managers may therefore take advantage of their greater information access to increase their personal wealth (Alchian and Woodward 1988).

Noreen (1988) states that both parties to a contract between agent and principal do not have the same information and agency relationship have a greater level of opportunistic behavior. Hill and Jones (1992) note that information asymmetry happens between manager and stakeholders. As insiders, managers are in the position to filter and sort information released to the stakeholders. However, stakeholders will still bear the losses caused by the decisions made by the managers. In such cases, stakeholders need to collect and analyze information without spending high agency cost. Bushman and Smith (2001) suggest that using a monitoring system via financial disclosure by the company will help alleviate agency problems. Both voluntary and mandatory disclosure will help stakeholders reduce the problem of information asymmetry.

Agency theory, as discussed by Jensen and Meckling (1976) offers answers and one of them is why accounting reports are provided voluntarily for creditors and stakeholders and why independent auditors are assigned by the managers to conduct an independent assessment of the company. Mitnick (1975) develops a model of company policy oriented towards agency relationships; he explains that within the company there is a transfer of resources to improving societal welfare for wider public interest purposes.

In the agency theory perspective, the senior management in manufacturing companies may seek to facilitate the development of the organizational culture in an effort to mitigate potential agency problems. Noreen (1988) argues that monitoring performance is much easier in manufacturing companies.

Further, Fama and Jensen (1983) state that agency problems arise because there is a conflicting interests between agent and principal in term of agency cost (cost of structuring, monitoring, and bonding) in which the contract between them is usually are not written and enforced. Effective control procedure is needed to overcome the agency problems (Fama and Jensen 1983).

The effects of ownership structure on agency perspective play an important attention in the government area as Claessens et al. (2002, P..2741) state that “investors with large ownership stakes have strong incentives to maximize their firms' value and are able to collect information and oversee managers, and so can help overcome one of the principal-agent problems in the modern corporation-that of conflicts of interest between shareholders and managers”.

Board system is also important in the corporate government area as Beiner et al (2004, P..327) state that “the board of directors plays a pivotal role in the governance of widely held corporations. It is generally acknowledged that the legal and contractual setting as well as the structure and activities of the board of directors have a non-negligible impact on the agency costs to which firms are exposed. At least in theory, the board of directors is one of the most important corporate governance mechanisms ensuring that managers pursue the interests of shareholders. Its task is to monitor, discipline, and remove ineffective management teams”.

Agency theory is the most widely theory employed by scholars in several disciplines including the accounting area. Despite its wide-scale use it does have its fair share of controversy and critics. For example Perrow cited in Eisenhardt (1989, P.58) argues that agency theory is “hardly subject to empirical test since it rarely tries to explain actual events”. Perrow also criticizes agency theory for being not realistic and one-sided because agency theory fails to explore other key issues such as the exploitation of workers (Eisenhardt 1989). Regardless of such controversy, there are thought to be many agency theory contributions such as re-

establishing organizational thinking in terms of the importance of incentives and self-interest (Eisenhardt 1989).

Eisenhardt (1989) divides agency theory studies in two streams of theoretical agency research which are the positivist stream and principal-agent stream. The positivist stream describes behavior in which shareholder (principal) and management (agent) interests diverge; the focus is on how to solve the agency problem. Whereas, the principal-agent stream is more focused on the contract between principal and agents and often seeks to point out more effective contract alternatives.

Table 3.2 summarizes the previous research in the area of agency theory in several disciplines which mirroring the two key categorical streams of theoretical agency research.

Table 3.2 Summary of Agency Theory Studies

Author(s)	Research Stream	Agency Variables	Sample	Results
Amihud and Lev (1981)	Positivist	Manager vs owner controlled	309 Fortune 500 firms	Support
Walking and Long (1984)	Positivist	Management's equity and options	105 U.S. firms	Support
Anderson (1985)	Principal-Agent	Importance of nonsales activities, length of selling cycle and difficulty evaluating sales performance	159 sales districts in 13 electronics firms	Mixed
Eisenhardt (1985)	Principal-Agent	Information systems, cost of outcomes measurement, and outcome uncertainty	54 retail stores	Support
Eccles (1985)	Principal-Agent	Decentralization	150 interviews in 13 chemical electronics heavy machinery and machine component firms	Inductive model
Wolson (1985)	Positivist	General partner's track record	39 oil and gas limited partnerships	Support
Argawal and Mandelker (1987)	Positivist	Executive stock holdings	209 major corporations	Support
Kosnik (1987)	Positivist	Proportion of outside directors, equity held by outside directors and outside directors with executive experience	110 major corporations targeted for greenmail	Mixed

Source: Eisenhardt (1989)

Table 3.2 Summary of Agency Theory Studies (continued)

Author(s)	Research Stream	Agency variables	Sample	Results
Chow and Wong-Boren (1987)	Positivist	Firm size, financial leverage, and proportion of assets in place.	52 manufacturing firms in Mexico	Support
Cooke (1989)	Positivist	Quotation status, annual sales, total assets size, number of shareholders, parent company relationship, and industry type.	90 companies in Swedish	Support
Botosan and Harris (2000)	Principal-Agent	Information asymmetry, analyst following, Industry, liquidity, security issuance, growth	107 multi-segment firms in between 1987 and 1994	Mixed
Solomon et al (2000)	Principal-Agent	Corporate governance perceptions, investment decisions, demand for information	552 UK institutional investors	Support
Haniffa and Cooke (2002)	Positivist	Corporate governance, culture (race and education)	167 Company in 1995	Support
Marshall and Weetman (2002)	Positivist	Disclosure policies, and information economics	Annual report of 30 U.S and 30 U.K companies in 1998	Support

Source: Various sources

Table 3.2 Summary of Agency Theory Studies (continued)

Eng and Mak (2003)	Positivist	Managerial ownership, blockholder ownership, government ownership, and independent directors	158 Singaporean companies in 1995	Support
Lou et al. (2006)	Positivist	Current annual return, contemporaneous annual earnings, future earnings, ownership structure, and proprietary cost.	172 Singaporean public companies in 1994 – 2000	Support
Petersen and Plenborg (2006)	Principal-Agent	Information asymmetry, return on invested capital, systematic risk, size, leverage, solvency, ownership concentration.	36 industrial companies listed on the Copenhagen Stock Exchange in 1997 – 2000	Support
Cheng and Courtenay (2006)	Positivist	Board monitoring, corporate governance, and regulatory regime	104 companies listed on the Singapore Stock Exchange in 2000	Support
Barako et al. (2006)	Positivist	Non-executive director, dual leadership structure, audit committee, ownership structure, size, leverage, auditor, profitability, liquidity,	54 companies listed on the Nairobi Stock Exchange (Kenya) in 1992 - 2001	Support

Source: Various sources

Table 3.2 Summary of Agency Theory Studies (continued)

Abraham and Cox (2007)	Positivist	Ownership, governance and U.S listing characteristics	71 firms (removing financial companies in FTSE 100 firms)	Support .
Akhigbe and Martin (2008)	Positivist	Governance	Examine 768 US financial services firms	Support
Aripin et al. (2009)	Positivist	Board composition, ownership concentration, and firm size	40 companies listed on the Australia Stock Exchange in 2007	Support
Baek et al.(2009)	Positivist	Managerial ownership, executive compensation, block ownership, institutional ownership, outside director	The S&P data on 374 companies in 2000	Support
Ho (2009)	Positivist	Corporate governance, ownership structure,	100 companies listed on the Malaysia Stock Exchange in 1996, 2001 and 2006	Support
Taylor et al (2010)	Positivist	Adoption of IFRS, corporate governance, capital raising, and jurisdiction	111 Australian listed extractive resource firms in 2002-2006	Support
Dobler et al. (2011)	Positivist	Size and country	160 manufacturing companies in 2005	Support .

Source: Various sources

Overall, these studies provide support for the existence of both positivist and principal-agent streams of theoretical agency research. However this thesis uses the positivist stream of theoretical agency research. This matches with arguments from Berle and Means cited by Eisenhardt (1989, P. 59) define positivist agency theory as:

> Positivist researchers have focused on identifying situations on identifying situations in which the principal and agent are likely to have conflicting goals and then describing the governance mechanisms that limit the agent's self-serving behavior….Also, positivist researchers have focused almost exclusively on the special case of the principal-agent relationship between owners and managers of large, public corporations.

The following table reviews agency theory and its contribution to the literature. Table 3.3 represents an overview of agency theory summarized by Eisenhardt (1989). The table covers the key concepts of the agency theory problem.

Table 3.3: Agency Theory Overview

Key idea	Principal-agent relationships should reflect efficient organization of information and risk bearing costs.
Unit of analysis	Contract between principal and agent.
Human assumptions	Self-interest. Bounded rationality. Risk aversion.
Organizational assumptions	Partial goal conflict among participants. Efficiency as the effectiveness criterion. Information asymmetry between principal and agent.
Contracting problems	Agency (moral hazard and adverse selection). Risk sharing.
Problem domain	Relationships in which the principal and agent have partly differing goals and risk preferences (e.g.,compensation, regulation, leadership, impression management, whiste-blowing, vertical integration, transfer pricing).

Source: Adapted from Eisenhardt (1989, P.59)

Table 3.3 shows that the domain of agency theory is about the relationships that mirror the basic agency structure. The focus is on the principal and agent behavior in a company. However, as the two parties have different objective, they develop a different point of view in managing risk.

Conflicts of interest emerge when members of the organization meet in a situation where a formal act or the effect of that act has the potential of generating personal benefit (Demski 2003). Similarly, Gomez-Mejia and Wiseman (2007) conclude that the problems of the relationship in agency theory comprise: information asymmetry, bounded rationality, and the problem of potentially different goal conflicts between agent and principal. Geis (2007) states that problems caused by misbehavior of the managers in a company include shirking, lavish compensation, entrenchment and excessive risk-taking.

Larraza-Kintana et al.(2007) note that in situations where companies are facing uncertainty in generating profit, managers tend to anticipate such situations by maximizing personal benefits by taking bigger risks. Watts and Zimmerman (1990) argue that agency cost attracts accountants as accounting play a role in minimizing agency cost.

Despite the criticisms, agency theory provides an important contribution to the literature as an empirical valid perspective it offers insights into information system, uncertainty, incentives, and risk (Eisenhardt 1989).

3.4 The Link between Disclosure and Agency Theory

This section reviews the agency theory literature to offer insights into manufacturing listed companies' risk disclosure practices. Studies on risk reporting have adopted various theories. These include: signaling theory (Bremer and Pettway 2002; Lee et al. 2003; Sinclair-Desgagné and Gozlan 2003; Cheng et al. 2009; Hill and Short 2009), stakeholder theory (Atan and Maruhun 2009), attribution theory (Linsley and Shrives 2006) and information cost theory (Morrison 1993; Ahmed, Beatty and Bettinghaus 2004). However the most widely theory employed by accounting researchers is agency theory (Solomon et al. 2000; Marshall and Weetman 2002; Cabedo and Tirado 2004; Abraham and Cox 2007; Akhigbe and Martin 2008; Dobler et al. 2011). This thesis adopts agency theory as the underlying theoretical framework explaining risk disclosure as it best highlights the economic drivers of communication. The link between disclosure and agency theory tenets is discussed below.

In the agency relationship between manager (agents) and shareholders (principals) there is separation of ownership and control. Principals want agents to act to maximizing the principal welfare (Jensen and Meckling 1976). A major issue is the information asymmetry between shareholders and managers that some information may be given but some may be withheld (Marshall and Weetman 2002). On the others hand, agents are assumed to have incentives to disclose information voluntarily, mainly driven by rational agents' self-interest for example regarding their reputation and remuneration (Healy and Palepu 2001). Disclosure can mitigate information asymmetry problems (Botosan 1997; Hill and Short 2009). When managers choose not to disclose relevant information in the financial report, problems of an information gap between managers and users will result in a less than transparent annual reports (Marshall and Weetman 2007) or in reference to agency cost the withheld disclosure is the consequence of a conflict of interest between managers and shareholders (Berger and Hann 2007). The choice to disclose or withheld

information may affect investor perceptions and market price (Hirshleifer and Teoh 2003).

Greater disclosure levels are related with a lower cost of equity capital (Botosan 1997). Disclosure can reduce estimation risk and reduce information asymmetry and lower the cost of capital (Lang and Lundholm 1996; Richardson and Welker 2001) and to better avoid potential market failure and increase market liquidity leading to more efficient capital markets (Welker 1995; Healy and Palepu 2001).

Verreccia (2001) divides accounting literatures into three taxonomies. Those three taxonomies are association-based disclosure, discretionary-based disclosure, and efficiency-based disclosure. This thesis generally employs an association-based disclosure theme which according to Verecchia (2001, P.97) is:

> work that studies the effect of exogenous disclosure on the cumulative change or disruption in investors' individual actions, primarily through the behavior of asset equilibrium prices and trading volume.

This thesis focuses on voluntary risk disclosure. Voluntary disclosure has received considerable attention in the accounting literature in recent decades (Gray et al. 1995; Healy and Palepu 2001; Einhorn 2007; Wang et al. 2008). Voluntary disclosure can change the investors' expectation about the value of the firm (Einhorn 2007). A firm's decision to communicate voluntary disclosure is possibly as a reaction to globalization, innovation or changes in business and capital market backgrounds (Healy and Palepu 2001). In the agency perspective, Hossain et al (1995) state that voluntary disclosures could be used as a ways to lessen agency costs. Agency costs are incurred by managers and, consequently, managers may be motivated to provide voluntary information to decrease agency costs.

A better level of risk communication allows capital market participants to be more aware of potential material changes and in doing so, such disclosures can reduce agency costs. Arguably, the disclosure of information about risk will also improve broader stakeholders understanding: the company (using internal data) can directly communicate the levels of various risks it faces. This higher level of transparency will potentially ease the task of interpreting the risks of the company by external users (Marshall and Weetman 2002; Cabedo and Tirado 2004; Taylor 2008; Hill and Short 2009). From an agency viewpoint, Solomon et al (2000) argues that risk disclosures represent a means of controlling the agency problem. In addition, Abraham and Cox (2007, P.229) state that "the relationship between risk disclosure and corporate ownership and governance is of interest to regulators because institutional owners and independent directors are expected to reduce agency problems, and thus lessen the need for regulatory intervention in corporate reporting".

Shareholders and other parties involved need to understand the profile of the company and its risks. Hence, they need information on the risks encountering the company and how the directors are managing those risks. Companies nowadays are disclosing limited information on risks. Some of the examples are the cases of extreme accounting irregularities exposed to the public like cases of WorldCom, Xerox, Enron etc which highlight the importance of risk awareness and risk management. Moreover, in the context of corporate governance, revealing risk information in financial report is undeniably important (Linsley and Shrives 2005b).

Latridis (2008) explains that accounting disclosure can reduce uncertainty related to company financial target for example method selection, accounting policy, prosperity, company growth etc. Reduction of uncertainty and information asymmetry as a consequence of disclosure will improve the communication between managers and other parties including shareholders.

In summary, agency theory principles are advanced as the theoretical justification for the development of this thesis hypothesis. The following section reviews past voluntary disclosure studies and links to voluntary risk disclosure.

3.5 Voluntary Disclosure

This section presents an overview of voluntary disclosures studies to explain agency theory tenets in voluntary risk disclosure research. This section reviews the literature concerning the motivation of companies to provide voluntary disclosure information. Examination of management's motivation to disclose information voluntarily provides insights as to why risk information is (or is not) voluntarily disclosed in annual reports. There is extensive theoretical and empirical research on the economic consequences of voluntary disclosure studies.

Barako, Hancock and Izan (2006) argue that an examination of voluntary disclosures is a good way to study agency theory. Given that majority shareholders have better access to a firm's secret information, voluntary disclosure can provide reliable and credible communication to build minority shareholders trust.

Voluntary disclosures are optional choices by companies. Indeed, Gray, Meek, and Roberts (1995, P.48) state:

> companies have incentives to voluntarily disclose relevant information to investors. Moreover, certain incentives are likely to extend to other stakeholders as well, such as employees, customers, and regulatory agencies. Companies balance the benefits of increased disclosures against such costs as information collection and processing costs, litigation costs, political costs, and competitive disadvantage costs. Financial reporting is influenced by a complex set of supply and demand forces.

Tian and Chen (2009) compare and contrast voluntary and compulsory (mandatory)[14] disclosures as shown in Table 3.4.

Table 3.4: A Comparison of Voluntary Disclosures and Mandatory Disclosures

Item	Voluntary Disclosures	Mandatory Disclosures
Definition	Except compulsory disclosures, the information disclosed by listed companies for the sake of corporate images, relationship with investors, and avoidance of accusation risks	The information that is required to be disclosed according to the securities law, accounting principles, and regulatory agencies' regulations
Motive	Self-interested information communication between listed companies and other interest-related parties	Use laws and regulations to adjust the information communication between listed companies and other interested related parties
Content	Companies' future strategies, R and D plans, prediction information, purchase and merger information, investment project analysis, and financial information analysis, etc.	Companies introduction, basic financial information, information about the board and top managers, vital related transactions, explained for important items
Carrier	Annual reports, public announcements, booklets, websites, roadshows, etc.	Annual report and certain interim reports
Time	At the 'right' time	Fixed time in a year and season
Balance mechanism	Corporate governance mechanism's design and effectiveness	Laws, regulations and execution
Root of disclosures	Economic globalization and globalization of capital market	Monopoly of companies on self information

Source: Adapted from Tian and Chen (2009, P. 59).

In comparing mandatory and voluntary on qualitative disclosure, Marshall and Wetmann (2002) note that reduction of information asymmetry is often due to the monitoring burden between agents and principals. In the case where there is a new rule for mandatory disclosure, there will be interpretation as to how the regulation should be implemented. In this

[14] Mandatory disclosures are not the subject of this research.

context, there will be confusion from the users of information who may observe what the company has disclosed but who have no instrument to assess to what extent the company has taken advantage on the information disclosed. Similarly, in voluntary disclosure, the user will often not understand the causes or the extent of nondisclosure prepared by the company (Marshall and Weetman 2002).

Disclosure in company annual report incurs a cost spent by the company to make the information available to the users of annual report. Such costs include company cost in gathering information, management supervision, audit and legal fees and the dissemination of the information (Cooke 1989). Regarding voluntary disclosure, Cooke (1989) argues that the benefits of voluntary disclosure usually overcome the cost spent by the company. These benefits include: additional disclosure which helps the company invite the interest of new shareholders, ability to help reduce informational risk which will can in turn reduce the cost of capital and ability to raise capital on the market. Lastly, voluntary disclosure is deemed beneficial to gain additional information related to social responsibility of the listed company which eventually will increase social participation through their social responsibility program (Cooke 1989).

Healy and Palepu (2001) argue that there are potentially three types of capital market effects for firms that make extensive voluntary disclosures: improve liquidity for their stock in the capital market, reduction of their cost of capital, and increased following by financial analysts. Whereas, Botosan (1997) and Botosan and Plumlee (2002) conclude that for companies with low analyst following there is a negative relation between cost of equity capital and the extent of their voluntary disclosures.

Suijs (2007) argues that companies may choose not to disclose private information if they think that response from the investor is still uncertain. Considering the need of the company to gain capital from the market, investors will likely choose to invest in a company with a lower risk level (or a higher risk level if there is a potential for higher profit). Based on such

considerations, companies may choose to disclose only some information and withhold ‘bad” news (Suijs 2007).

The following section highlights key findings from previous voluntary disclosure studies.

3.5.1 Voluntary Disclosure Studies

Table 3.5 summarizes the ongoing research in the area of voluntary disclosure. This table shows that research in the areas of voluntary disclosure has usually been conducted on a single country basis. Even for the rarer comparative countries studies on voluntary disclosure, there is a dearth of research using sample countries with different economic scenarios and in a specific industry sector. This thesis uses agency theory as the theoretical background for analysis manufacturing companies’ voluntary risk disclosure in a multi country setting with different economic scenarios.

Table 3.5 Previous Studies on Voluntary Disclosure

Author(s), subject, and measurement of voluntary disclosure	Explanatory variables	Research approach	Results
Chow and Wong-Boren (1987) Analyse the voluntary financial disclosure practices in Mexican corporation (accounting institutions and practice in a non-Anglo American nations). Use weighted and unweighted disclosure indices checklist.	Firm size, financial leverage, and proportion of assets in place.	Data: The Mexican federal government's 1982 *official gazette* (the primary outlet for exchange-listed firms' required annual reports) Sample: 52 manufacturing firms in Mexico Statistics: Cross-sectional regression Theory: Agency theory	Voluntary disclosure is positively related to the size of company.
Cooke (1989) Analyse factors affecting voluntary disclosure in Swedish company. Use unweighted disclosure indices checklist.	Quotation status, annual sales, total assets size, number of shareholders, parent company relationship, and industry type.	Data: Annual reports of Swedish company both listed and unlisted in the year 1985 Sample: 90 companies in Swedish Statistics: Step-wise regression Theory: Agency theory	Listing status, size, number of shareholder and industry type have a positive effect towards voluntary disclosure.
Gray et al. (1995) Examination of corporate voluntary disclosures in the U.S. and U.K. multinational corporations. Use unweighted disclosure indices checklist.	Country and international listing status	Data: Annual report in the U.S and U.K industrial companies selected in The Business Week 1000 in 1990 and Financial Times UK Top 500 in1989 Sample: 116 U.S. and 64 U.K Multinational corporations. Statistics: Anova Theory: Agency and legitimacy Theory	There are significant differences between internationally listed and domestic listed multinational corporations. There is also a significant country effect in the non-financial information.

Table 3.5 Previous Studies on Voluntary Disclosure (continued)

Williams (1999) Examines voluntary environmental and social accounting disclosure practice in the Asia pacific region. Use content analysis (number of sentences).	Culture, political and civil system, legal system, level of economic development, and equity market	Data: Annual report in the Asia pacific companies in 1995 Sample: 356 companies in Australia, Singapore, Hong Kong, Philippines, Thailand, Indonesia, and Malaysia) Statistics: Multiple regression Theory: Political economy theory	Culture (uncertainty avoidance and masculinity) and political and civil system are significantly correlated with voluntary disclosure.
Botosan and Harris (2000) Examine factors affecting firms in initiating changes to reveal quarterly segment disclosure in two different periods. Use (1,0) if firm reports voluntary quarterly segment disclosure or not report	Information asymmetry, analyst following, Industry, liquidity, security issuance, growth	Data: Annual report in U.S firms Sample: 107 multi-segment firms in Between 1987 and 1994 in which 65 companies are firms providing information on segment disclosure and 42 firms are non-disclosing firms. Statistics: t-test and multiple regression Theory: Agency theory	This research discovers that in change firms there is a decline in liquidity (measured by trading volume) and increase in information asymmetry (measured by analyst forecast consensus). Meanwhile, in terms of competitive environment and shift in access of capital market, there is no significant difference between change firms and non-disclosing firms within the two periods.
Haniffa and Cooke (2002) Examines voluntary disclosure practice in Malaysia Use unweighted disclosure indices	Corporate governance, culture (race and education)	Data: Annual report in Malaysia companies Sample: 167 Company in 1995 Statistics: multiple regression Theory: Agency theory	There are significant associations between two corporate governance variables (non-executive directors and domination of family members on boards), and culture variable (proportion of Malay directors) with the extent of voluntary disclosure. Company specific characteristics (including assets in place (size) and return on equity (profitability)) are significant predictors of voluntary disclosure.

Table 3.5 Previous Studies on Voluntary Disclosure (continued)

Watson et al. (2002) Investigate UK companies on the relationship between voluntary disclosure of accounting ratios in corporate annual report and factors affecting communication. Number of voluntary accounting ratios disclosure	Profitability, return on investment, gearing, efficiency, size, and industry.	Data: U.K company's annual report Sample: 313 UK companies in 1989 – 1993 Statistics: multiple regression Theory: Legitimacy, signalling and Agency theory	Company performance, industry and size best explain disclosure.
Eng and Mak (2003) Investigate the impact of ownership structure (managerial ownership, blockholder ownership and government ownership) and board composition (independent directors) on voluntary disclosure Use unweighted disclosure indices	Managerial ownership, blockholder ownership, government ownership, and independent directors	Data: Singapore company's annual report and financial highlights of companies on the stock exchange of Singapore Sample: 158 Singaporean companies in 1995 Statistics: Multiple regression Theory: Agency theory	There are positive significant associations between managerial ownership, government ownership, and size with voluntary disclosure and also negative significant associations between outside directors and debt with voluntary disclosure.
Lou et al. (2006) Analyse and discover effect of voluntary disclosure, ownership structure, and proprietary cost on the return future earning relation. Using unweighted disclosure index	Current annual return, contemporaneous annual earnings, future earnings, ownership structure, and proprietary cost.	Data: Singaporean company's annual report and *data stream* database analysis during 1994 – 2000 Sample: 172 Singaporean public companies in 1994 – 2000 Statistics: Multiple regression Theory: Agency theory	There is a positive significant relationship between return earnings and the levels of voluntary disclosure. This positive finding is weaker if there are higher managerial and government ownership, and proprietary cost is present.

Table 3.5 Previous Studies on Voluntary Disclosure (continued)

Petersen and Plenborg (2006) Examines the level of voluntary disclosure affects information asymmetry for industrial companies in Denmark. Using a disclosure index	Information asymmetry, return on invested capital, systematic risk, size, leverage, solvency, ownership concentration.	Data: Denmark company's annual report and *data stream* database analysis in 1997 – 2000 Sample: 36 industrial companies listed on the Copenhagen Stock Exchange in 1997 – 2000 Statistics: Multiple regression Theory: Agency theory	Voluntary disclosure affects information asymmetry shown as a negative coefficient.
Cheng and Courtenay (2006) Examine the association between board monitoring and the level of voluntary disclosure Using a disclosure index	Board monitoring, corporate governance, and regulatory regime	Data: Singapore company's annual report in 2000 Sample: 104 companies listed on the Singapore Stock Exchange in 2000 Statistics: Multiple regression Theory: Agency theory	There is positive significant association between independent directors and voluntary disclosure. The presence of an external governance mechanism and the regulatory environment enhances the strength of that association.
Barako et al. (2006) Examine voluntary disclosure in Kenya which have economic scenario as developing country Using weighted disclosure index method	Non-executive director, dual leadership structure, audit committee, ownership structure, size, leverage, auditor, profitability, liquidity,	Data: Kenya company's annual report in 1992 – 2001 Sample: 54 companies listed on the Nairobi Stock Exchange (Kenya) in 1992 - 2001 Statistics: Multiple regression Theory: Agency theory	Audit committee, is a significant factor associated with the level of voluntary disclosure. Non-executive directors are negatively significant with the extent of voluntary disclosure. Institutional and foreign owners, size and leverage are positively significant associated with voluntary disclosure.

Table 3.5 Previous Studies on Voluntary Disclosure (continued)

Aripin et al. (2009) Investigate Australia companies on the relationship between voluntary disclosure of accounting ratios in corporate annual report and factors affecting communication. Using a disclosure index	Board composition, ownership concentration, and firm size	Data: Australia company annual report in 2007 Sample: 40 companies listed on the Australia Stock Exchange in 2007 Statistics: Multiple regression Theory: Agency theory	There is a positive influence between company size and independent directors with company's voluntary disclosure.
Baek et al.(2009) Examine how managerial ownership and corporate governance impact company's voluntary disclosure level and type. Use S&P survey on company disclosure	Managerial ownership, executive compensation, block ownership, institutional ownership, outside director	Data: The standard and poor's (S&P*) Transparency and Disclosure Survey* data Sample: The S&P data on 374 companies in 2000 Statistics: Multiple regression Theory: Agency theory	Managerial ownership (negative relation) and corporate governance / outside director (positive relation) effect the level and type of voluntary disclosure.
Ho (2009) Employs agency theory framework to analyze ownership structures and voluntary disclosures. The analysis covers three key time periods that are considered critical in Malaysia in terms of regulatory reforms. Using unweighted disclosure index method	Corporate governance, ownership structure,	Data: Malaysia company annual report in 1996, 2001 and 2006 Sample: 100 companies listed on the Malaysia Stock Exchange in 1996, 2001 and 2006 Statistics: Multiple regression Theory: Agency theory	Her results show that ownership concentration is positively associated with voluntary disclosures.

Source: Various sources

Overall, these studies provide support in this research thesis for the position of using agency theory to best examine voluntary disclosure practices. Further, the following section reviews the risk disclosure definition and previous risk disclosure studies in various countries.

3.6. Risk Disclosure

3.6.1 Risk Disclosure Definition

Remenyi dan Heafild (1996, P.349) define risk as:

> Risk is defined as the possibility that the actual input variables and the outcomes may vary from those originally estimated… risk is usually used in the context of a potential hazard or the possibility of an unfortunate outcome resulting from a given action, intrinsically risk may be either positive or negative.

Typically, the term “risk” is used interchangeably with terms like hazard, threat or harm. While in the finance literature it refers to a result generated from a decision in which there is probability of uncertainty in the outcome. In the pre-modern era, risk was always used in reference to natural hazards. In the modern era, the concept of risk may be seen as positive or negative depending on the outcomes of events (Linsley and Shrives 2006).

Linsley and Shrives (2006, P.389) more specifically define risk disclosures as:

> The reader is informed of any opportunities or prospect, or of any hazard, danger, harm, thread or exposure that has already impacted upon the company or may impact upon the company in the future or of the management of any such opportunity, prospect, hazard, harm, threat or exposure.

Because of its comprehensive nature, this definition of risk is adopted in this thesis.

There are five major sub-categories for risk: ‘business’, ‘strategy’, ‘operating’, ‘market’ and ‘credit’ risks (Dhaliwal et al. 1983; Jorion 2000; Cabedo and Tirado 2004). Each of these are defined below.

As Jorion cites in Cabedo and Tirado (2004, P.186) states:

> Business risk is that which the company assumes in order to create competitive advantages and added value for its shareholders. It is therefore considered as an internal company skill employed to deal with the competitive environment in which it is located. Hence, this risk refers to the possible impact that the loss of these company competitive skills might have, with the consequent influence on the possible future loss of company wealth.

Strategy risk is defined as Cabedo and Tirado (2004, P.187) states:

> This risk is associated with basic changes in the economy. The evolution of the economic environment generates a high level of uncertainty, which affects the performance of the company and consequently, the creation of wealth. In this way, any disturbance in the economic environment in which the companies are competing will affect them according to how sensitive a company is towards each of the factors that defines the environment. Companies should therefore inform on how they are affected, always unfavourably, by changes in certain factors that indicate the evolution of the economy, or, to put it another way, how sensitive the company is to changes in these factors.

Operating risk arises from the risk inherent in the production of the firm (Dhaliwal et al. 1983). Thus, Cabedo and Tirado (2004, P.192) define operational risk faced by the firm as:

> the risk of direct or indirect losses resulting from internal process errors, personnel or systems errors, or from external factors.

Market risks can be defined as risk resulting from a variation in the price of particular economic level. Market risk divided into four large categories: 1) exchange risk, 2) interest risk, 3) risk of price variations in financial assets other than fixed income assets, and 4) risk of commodity price variation

(Cabedo and Tirado 2004). Hence, market risk arises from movements in the level or volatility of market prices (Jorion 2000).

Credit risk arises because counterparties of firms may be unwilling or unable to fulfill contractual obligations (Cabedo and Tirado 2004). Further, Cabedo and Tirado (2004, P.190) define credit risk as:

> the possibility that over time, a decrease in the real value of a company's client portfolio may occur as a result of credit quality deterioration suffered by those making up the portfolio.

These definitions of five key sub-categories of risk are often used and adopted in this thesis.

These five sub-categories of risk are important to this thesis, as Beretta and Bozzoland (2004) state that the increase in complexity of business strategies, operations and regulations makes it harder for investors to clearly understand financial information without good explanations of risk factors. Thus the provision of these five sub-categories of risk enhance the understand of companies' financial information. These issues are further explored in Chapter 7.

3.6.2 Risk disclosure studies

There are interesting but not wholly consistent empirical results from past studies that focus on risk disclosure. Table 3.6 summarizes the ongoing research in the area of risk disclosure.

Table 3.6 Previous Studies on Risk Disclosure

Author(s), subject, and measurement of risk disclosure	Explanatory variables	Research approach	Results
Solomon et al (2000) Develop a conceptual framework on corporate risk disclosure on the companies in England by referring to the Turnbull Report. Questionnaire survey to U.K institutional investors' attitude toward risk disclosure.	Corporate governance perceptions, investment decisions, demand for information	Data: Questionnaire survey in U.K institutional investors in 1999 Sample: 552 UK institutional investors Statistics: Chi-square statistic, Wilcoxon signed-rank Z statistic, and Kruskal-Wallis (K-W) statistic Theory: Agency theory	Institutional investors believe that an increase in risk disclosure will help making decision for their investment portfolio.
Marshall and Weetman (2002) Analyse foreign exchange risk management disclosure in the two countries (U.S and U.K) comparison. Use categorical basis (1,0) if firm reports risk disclosure or not report	Disclosure policies, and information economics	Data: U.S and U.K companies in 1998 Sample: Annual report of 30 U.S and 30 U.K companies in 1998 Statistics: Kruskal-Wallis and Mann-Whitney tests Theory: Agency theory	Risk disclosure regulations made at similar times can have a different impact in two different countries with different regulatory environments.
Sinclair-Desgagné and Gozlan (2003) Investigate the amount and quality of the environment risk disclosure Use risk disclosure game tested on stakeholders.	Persuasion games, and informational regulation	Data: Some illustrative cases Sample: Case in the environment risk disclosure that involve companies' stakeholders Statistics: Bayesian equilibria Theory: Signalling theory	They conclude that disclosure plays a significant role in influencing the decision making of the stakeholders related to their confidence in the information and it will also affect company's investment in the provision of information.

Table 3.6 Previous Studies on Risk Disclosure (continued)

Beretta and Bozzolan (2004) Examine the quality of voluntary risk disclosure on the Italian Stock Exchange listed companies (where there is no regulation on risk information) Use disclosure index and content analysis	Size, industry	Data: Company listed on the Italian Stock Exchange in 2001 Sample: 85 annual report of all non-financial companies Statistics: Multiple regression Theory : Signalling theory	One of their findings different from previous research is that the quantity of disclosure does not influence size and industry.
Cabedo and Tirado (2004) Design and establish a set of specific risk quantification models for risk disclosure. Use the value of risk (VaR) to calculate financial and non financial risks	Risk quantification model	Data: Company listed on the Spanish Stock Exchange in 1991 - 2001 Sample: Financial and non financial data on 1000 companies Statistics: Statistical distribution methods Theory: Agency theory	They differentiate risk into financial and non financial risk based on risk affecting business activities of a company. They use the value of risk (VaR) to calculate financial and non financial risks which then result in a classification of risks which are: business risk, strategic risk, market risk, credit risk, operational risk and liquidity risk.
Linsley and Shrives (2006) Explore risk disclosures within a sample of 79 UK company annual report Use content analysis	Company size	Data: U.K companies as at 1 January 2000 Sample: 79 non-financial firms listed within the FT-SE 100 Index Statistics: Pearson correlation and Wilcoxon signed ranks test Theory: Attribution theory	Discover a positive association between risk disclosure and company size and a negative association between the number of risk disclosures and the level of environmental risk (measured by Innovest EcoValue21tm). Moreover, they also find evidence supporting the idea that non-monetary risk disclosure is much more significant than monetary risk disclosure.

Table 3.6 Previous Studies on Risk Disclosure (continued)

Abraham and Cox (2007) Investigate the quantity of narrative risk information which separates into business, financial and internal control risk Use content analysis	Ownership, governance and U.S listing characteristics	Data: U.K FTSE 100 in year of 2002 Sample: 71 firms (removing financial companies in FTSE 100 firms) Statistics: Ordinary least squares (OLS) estimations Theory: Agency theory	Risk reporting is negatively related to share ownership. The number of executives and the number of independent directors are positively related to the level of risk reporting in UK listed companies.
Akhigbe and Martin (2008) Observe change from capital market measures of risk of the companies with the effect of the enactment of Sabaness-Oakley (SOX) in 2002. SOX is enacted to overcome scandals committed by several US companies as SOX is able to increase the level of transparency of corporate finance by increasing disclosure and improving corporate governance. Measure the extent to which information is provided in footnote disclosures	Governance	Data: Annual report of U.S company in 2002 Sample: Examine 768 US financial services firms Statistics: Regression analysis Theory: Agency theory	The research shows that over the early period of the enactment of SOX, risk measurement has a positive correlation with mandatory disclosure and governance provisions. Whereas, in the longer term, a shift in unsystematic risk has a negative correlation towards the decrease of investor uncertainty as transparency improves. Generally, they conclude that changes in shorter and longer term risk measures vary in reverse with the strength of disclosure and governance characteristics. The financial market will award companies with strong disclosure and governance and punish company with weak disclosure and governance.
Atan and Maruhun (2009) Examine mandatory and voluntary risk disclosure in annual report of Malaysian listed companies. Use content analysis and risk disclosure index	Company size, leverage, and industry type.	Data: Annual report of Malaysian listed companies in 2006 Sample: 150 companies Statistics: Regression analysis Theory: Stakeholder theory	The level of risk disclosure is positively associated with size and not with leverage. They also find mixed results regarding industry type. Only the property industry is significantly associated with risk disclosure.

Table 3.6 Previous Studies on Risk Disclosure (continued)

Hassan (2009) Explore the relationship between UEA firm characteristics and the level of corporate risk disclosure (CRD) Use un-weighted risk disclosure index	Size, level of risk, industry type	Data: Company in United Arab Emirat (UAE) Sample: 49 financial and non financial companies in UAE Statistics: Multiple regression Theory: Institutional theory	He concludes that the level of corporate risk disclosure (CRD) is not significantly associated with corporate size. Corporate level of risk and corporate industry type are significant in explaining variation in CRD.
Hill and Short (2009) Examine the risk warning disclosures of initial public offering (IPO) companies and factors related to that disclosure Use content analysis	Information asymmetry, monitoring, proprietary costs, and nominated advisor (sponsor) reputation capital	Data: The Unlisted Securities Market (USM) and the Alternative Investment Market (AIM) companies Sample: 420 IPO companies on USM and AIM in 1991-2003 Statistics: Regression, logit, and probit analysis Theory: Signalling theory	They find that in IPO companies risk disclosure contain a greater proportion of forward-looking information but have a lower proportion of information on internal control and risk management. They find a negative relation between director's shareholdings and risk disclosure.
Taylor et al (2010) Examine Australian listed resource firm in Australia in 2003 – 2006 (the base years full of adoption of IFRS in Australia) regarding financial risk management disclosure Use disclosure index	Adoption of IFRS, corporate governance, capital raising, and jurisdiction	Data: Annual report in Australian Companies Sample: 111 Australian listed extractive resource firms in 2002-2006 Statistics: Ordinary least square (OLS) Regression Theory: Agency theory	They find that corporate governance, capital raising, firm size and leverage of the company are positively correlated with financial risk management disclosure. They conclude that the introduction of IFRS motivates the companies to better communicate the company's financial risk information.
Dobler et al. (2011) Investigate multi-country (U.S., Canadian, U.K.,(common law countries) and German (civil law) risk disclosure in the manufacturing companies Use content analysis	Size and country	Data : Annual reports of U.S, Canada, U.K and German companies in 2005 Sample: 160 manufacturing companies in 2005 Statistics: Multiple regression Theory: Agency theory	They find that size positively affects the association between risk disclosure quantity and the level of firm risk and they also find that there is negative association between risk disclosure quantity and leverage in the German financial setting and positive association in the North American settings.

Source: Various sources

Overall, the research findings are empirically mixed and scholars have suggested that more research is needed in the area of risk disclosure study. Risk reporting is becoming a greater concern of companies (Cabedo and Tirado 2004). This thesis posits that risk disclosures are influenced by four key predictor variables: country, size, board independence, and ownership. The next section offers the agency theory-based hypotheses development.

3.7 Hypotheses Development

This section sets out the rationale for selection of the testable hypotheses. Agency theory is utilized in this thesis to offer insights into manufacturing listed companies' risk disclosure practices; particularly to ascertain whether country, company size, managerial ownership and board independence lead to increased risk communication (as measured by the Risk Disclosure Index (RDI)). Each variable (originally covered in Chapter 2) is discussed in more detail in the following sub-sections.

3.7.1. Country of Incorporation

Prior studies document the effect of country on disclosure practice. Dye (1985), in his analytical model, suggests that voluntary communication is affected by disclosure requirements by the accounting regime. Meek, Roberts, and Gray (1995) find that country/region is one of the key factors explaining the extent of voluntary disclosure. Williams and Tower (1998) examine the preferred level of disclosure regarding the issue of differential reporting in Singapore and Australia small business entities and note small company managers in those two countries differ in their acceptance of international standards requiring more disclosure requirements than existing domestic standards. Tower, Hancock, and Taplin (1999) state that country of reporting is the main significant factor for the level of IAS compliance in the Asia-Pacific region. Soewarso et al. (2003) also conclude that country of incorporation is the main determinant of Australia and Singapore disclosure practice differences. Australian companies

communicate significantly more information relative to their Singaporean counterparts. Bailey et al. (2006) examine the increased disclosure for non-U.S. firms when listing shares in the U.S. and conclude that the country factor is an important determinant of increased disclosure. They note the greatest increases are for firms from developed countries. Marshall and Weetman (2002) note through a two-countries comparison between the U.S and U.K on the disclosure of foreign exchange risk management policies, that risk disclosure regulations made at similar times and with similar propulsions, can have a different impact in two different countries with different regulatory environments. Based on the above literature review, this thesis posits country as a determinant factor explaining the association between risk disclosures. Thus, it is hypothesized that:

H1: There is an association between country of incorporation and risk disclosures in the annual reports in listed manufacturing companies.

3.7.2 Company Size

Numerous prior studies document the significant effect of company size on disclosure practices. Atan and Maruhun (2009) predict the association between company size as a key independent variable with voluntary disclosures of risk information as the dependent variable. The level of risk information disclosures is thought to be positively associated with size. Kanto and Schadewitz (1997) explore a suitable model for voluntary disclosure policy in the firm and find that voluntary disclosure is related with firm-size. Similarly, Linsley and Shrives (2006) explore risk disclosures within an association between the number of risk disclosures and company size. Their result supports the hypothesis that a positive correlation exists between the volume of risk disclosures and company size.

Overall, many past studies highlighted a positive relationship between company size and the level of disclosure (Kanto and Schadewitz 1997;

Linsley and Shrives 2006; Atan and Maruhun 2009). Consistent with agency theory principles, this thesis adopts company size as a potential factor explaining the positive association between aggregate risk disclosures by proposing a directional hypothesis:

H2: There is a positive association between company size and the risk disclosures in the annual reports of manufacturing listed companies.

3.7.3 Managerial Ownership

Jensen and Meckling (1976) believed that in an agency relationship both agents and principals are seeking to maximize their own self interest and that agents will not always behave in the best interests of principals. Managerial ownership is considered as having an influence in determining the nature of the agency problem. That is, managers have greater incentives to take fringe benefit and reduced incentives to maximize job performance when the managers have less share ownership in the companies.

Several prior studies document the significant effect of managerial ownership on disclosure practices. Gelb (2000) examines the effect of managerial ownership on firms' disclosures and finds firms with lower levels of managerial ownership are more likely communicators of risk disclosures than firms with higher levels of managerial ownership. Eng and Mak (2003) also note a negative relationship between managerial ownership and increased disclosure. Thus, lower managerial ownership is associated with increased voluntary disclosure.

Consistent with the results of most past agency theory studies which note a negative relationship between managerial ownership and the level of disclosure (Gelb 2000; Eng and Mak 2003), this thesis analyses ownership structure as a potential factor explaining the negative

association between risk disclosures by proposing a directional hypothesis:

H3: There is a negative association between managerial ownership and the risk disclosures in the annual reports of manufacturing listed companies.

3.7.4 Board Independence

Due to the separation of ownership and control of a firm, an agency relationship provides opportunities for firm management to engage in opportunistic behavior that enhances their welfare at the expense of the firm (Jensen and Meckling 1976). Agency theory suggests that governance mechanisms such as monitoring by the board of directors is designed to minimize divergences that arise from the separation of ownership and decision control (Fama and Jensen 1983).

Independent directors have incentives to use their decision control to preserve reputational capital. The main purpose of the independent director is to supply governance protection to the shareholders. In term of voting representation on the member of the directors or boards, independent directors should take sides and represent their constituencies that cannot be protected by either arms-length market transactions or other bilateral arrangements. Thus, shareholders, as beneficiaries of risk, require representation on the board that is independent of management to protect their assets (Cheng and Courtenay 2006).

Prior studies document a significant effect of board independence on disclosure practices. For instance Baek, Johnson, and Kim (2009) find a positive association between outside directors and company's disclosures in the board and management process information. Moreover, Chen and Jaggi (2000) note a positive association between the proportion of independent non executive directors (INDs) on corporate boards of Hong Kong firms and comprehensiveness of financial disclosures. Most relevant

empirical agency theory studies find that INDs on corporate boards have a positive influence on the management decision to disclose financial information. Cheng and Courtenay (2006) state that boards with a larger proportion of independent, non-executive directors (proxy for board-monitoring effectiveness) are significantly and positively associated with higher levels of voluntary disclosure. In summary, the results of most past agency theory studies establish a positive relationship between board independence and the level of disclosure (Chen and Jaggi 2000; Cheng and Courtenay 2006; Baek et al. 2009). Accordingly, this thesis adopts the level of board independence as a potential factor explaining the positive association between risk disclosures by proposing a directional hypothesis:

H4: There is a positive association between higher levels of board independence and the risk disclosures in the annual reports of manufacturing listed companies.

To assess the impact of the crisis time span on risk disclosure practices, this thesis will investigate whether there is significant association between risk disclosure across the years 2007-2009. The above four hypotheses will be separately tested for each of the 2007, 2008, 2009 financial year periods.

3.8 Summary

This chapter outlined the relevant literature of voluntary risk disclosure using both the principles of agency theory and findings of past voluntary disclosure studies and voluntary risk disclosure studies. There are four hypotheses based on the literature presented in this chapter. Agency theory is utilized in this thesis to offer insights into manufacturing listed companies' risk disclosure practices. The findings of this thesis will shed more light on four countries' (Australia, Indonesia, Malaysia, and Singapore) risk disclosure practice.

The next chapter outlines the research approach by discussing the data sample selection, data sources, and variable measurement (dependent, independent, and control) utilized in this thesis.

CHAPTER 4
RESEARCH APPROACH

4.1 Introduction

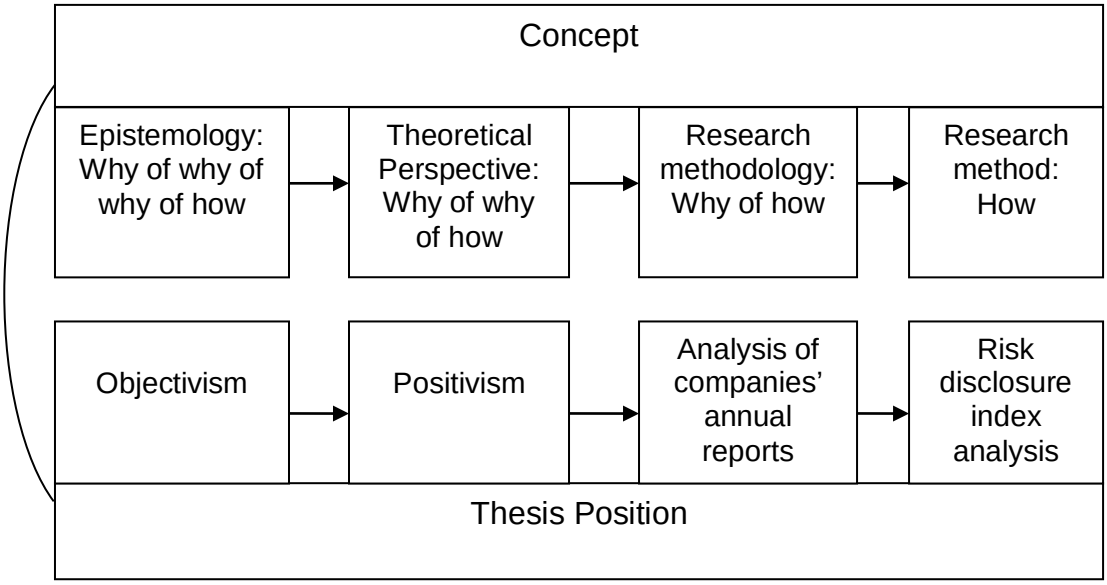
Chapter 1 provides an overview of the study, including the introduction, background, research questions, significance and contribution of the study, assumptions and limitations. Chapter 2 outlines the accounting environment in the four sample countries (Australia, Indonesia, Malaysia, and Singapore). Chapter 3 then reviews the literature on agency theory and the links of disclosure with country, company size, managerial ownership, and board independence, and the relevant prior empirical research leading to the development of four hypotheses.

The purpose of this chapter is to outline the thesis research process in more detail, particularly focusing on the methodology and specific methods. Chapter 4 also explains the creation of the final voluntary Risk Disclosure Index (RDI). This chapter then provides details regarding the measurement of the predictor variables.

4.2 The Research Process

As discussed in Chapter 3, this thesis adopts and utilizes the positivism empirical quantitative research approach to describe and explain the risk disclosure practices in Australian, Indonesian, Malaysian, and Singaporean manufacturing listed companies (see Section 3.2). Crotty (1998) reveals there are four basic elements of any research process namely epistemology, theoretical perspective, methodology and methods. The research process used in this thesis is described in Figure 4.1.

Figure 4.1: Thesis Research Process



Source: Adapted from Crotty (1998), Brown (2001), Astami (2005), Suhardjanto (2008)

Figure 4.1 shows the four basic element of the research process used in this thesis. In term of epistemology, Crotty (1998, P.3) defines epistemology as "the theory of knowledge embedded in the theoretical perspective and thereby in the methodology". Crotty (1998, P.8) clarifies objectivism epistemology, "In this objectivist view of 'what it means to know', understanding and values are considered to be objectified in the people we are studying and, if we go about it in the right way, we can discover the objective truth". This thesis adopts and utilizes objectivism epistemology. Regarding the theoretical perspective, this thesis adopts the positivism paradigm. Peile (1994, P.201) argues that "In the positivist paradigm, theory, practice, and research are all seen as separate entities which may or may not interact. Positivist theory arises from, and is reformulated or falsified by, research". In turn, this positivism theoretical perspective validates the research methodology (analysis of companies' annual reports) and leads to specific research method (risk disclosure index analysis).

4.3 Sample Selection and Data Source

This thesis adopts and utilizes the positivism empirical quantitative research approach (see Section 3.2). To enhance the analysis, the years selected in this thesis are in the time span of 2007-2009. These three years encompass the impact of the global economic crisis faced by most countries in the world (Kenc and Dibooglu 2010; Zhang et al. 2010). This thesis analyses whether there are any significant differences between these years for risk disclosures. Overall, a total of 600 financial year reports are utilized as the sample set; this total is composed of 50 companies in each of the four countries over this three year time span.

To evolve appropriate data for the three research questions (see Chapter 1), four countries (Australia, Indonesia, Malaysia, and Singapore) are selected as the sample focus. This thesis focuses on the southern region of the Asia Pacific as it represents different yet similar characteristics (economic levels, language, and accounting heritage,). Each of these neighboring countries is a member of the Asian Pacific Economic Corporation (APEC) group, an organization formed in a spirit of cooperation (see Williams 1998). Each country had a colonial history. Finally, as discussed earlier, these four countries have experienced vastly different economic experiences during the years 2007-2009 (see Chapter 2).

For the purpose of this thesis, manufacturing companies are chosen as the sole sample focus. They are seen as implementing an integrated process that converts materials into goods (see Drucker 1990). Manufacturing companies have longer processes, more complex activities, and potentially have more business risks in their activities than many other firms. Arguably, manufacturing firms well test agency theory's ability to predict risk disclosures. Manufacturing firms produce goods and separates the business society (employees, consumers, and investors) from business (the production process converting raw materials into finished goods). This separation potentially leads to asymmetry of information

between the firms and their key stakeholders (Katz et al. 2009). The sole focus on manufacturing in this thesis helps to rule out the industry exogenous factors' problematic in many international accounting studies.

Data for the dependent, independent, and control variables are collected from 2007-2009 annual reports. The annual reports are used to obtain data on risk disclosure. This thesis only uses annual reports with English translations that can be compared between countries, including the risk disclosure components in an English version. For the purpose of this study, company annual reports are selected on the basis that the companies are listed on the four countries' stock exchanges. The annual reports of these companies were downloaded from the Australian, Indonesian, Malaysian, and Singaporean stock exchange websites, or from the ORBIS database. If they were not available from these sources they were downloaded directly from the companies' websites. Overall, the sample selection criteria for annual reports used in this thesis are: 1) listed on the four countries' stock exchanges; 2) in the manufacturing sector; 3) English language version; and 4) the annual report is available in all three years (2007, 2008, 2009). For the fourth criteria, the annual report availability in all three years is important because this research compares the companies' risk disclosure in each of the three key years from 2007-2009 encompassing the GFC.

A total of 600 firm years data were collected consisting of a random sample of 200 manufacturing listed companies' annual reports for fiscal year-ends ranging from 2007 to 2009. The reports include 50 annual reports of manufacturing companies per country, listed in the stock exchanges of Australia, Indonesia, Malaysia, and Singapore. As with many studies, sample firms are not completely representative of the total population of manufacturing listed companies in each country. This is because cross country analysis is hindered by the context of similarity/dissimilarity of firms in term of sample company characteristics such as company size, and profitability (Dobler et al. 2011). This study

incorporated a large total sample of 600 annual reports manufacturing listed companies in the four countries.

The classification of manufacturing listed companies are based on the ORBIS database which are categorized based on the NAICS 2007 (North American Industry Classification System 2007)[15].

4.4 Dependent Variable

Marston and Shrives (1991) review the use of disclosure indices as a measurement technique in accounting researches. They note that disclosure indices (which are lists of selected items that may be disclosed by companies in their published company reports) are often used by many researchers to measure the extent of disclosure.

The dependent variable in this study is the Risk Disclosure Index (RDI). To measure the level of risk disclosure practices of these four countries' manufacturing listed companies, this thesis use a 34-item Risk Disclosure Index (RDI); a continuous dependent variable. This research adopts a researcher-constructed risk disclosure index to create an index measuring the extent of risk disclosure by listed firms. This benchmark set is based on an extensive list of business, strategy, operating, market and credit voluntary risk disclosure items from key past studies. Statistical testing of the association between the extent to which country, company size, managerial ownership and board independence is conducted to analyze their relationship with the RDI of these four countries' manufacturing listed companies.

[15] The manufacturing industry in the NAICS 2007 (North American Industry Classification System 2007) includes: food manufacturing, beverage and tobacco product manufacturing, textile mills, textile product mills, apparel manufacturing, leather and allied product manufacturing, wood product manufacturing, paper manufacturing, printing and related support activities, petroleum and coal products manufacturing, chemical manufacturing, plastics and rubber products manufacturing, non-metallic mineral product manufacturing, primary metal manufacturing, fabricated metal product manufacturing, machinery manufacturing, computer and electronic product manufacturing, electrical equipment, appliance and component manufacturing, transportation equipment manufacturing, furniture and related product manufacturing, and also miscellaneous manufacturing.

The assumptions from the use of Risk Disclosure Index (RDI) used in this study are that the RDI is a reliable representation of the dependent variable, and the RDI can be applied as a valid measure for manufacturing companies used for this thesis**.**

4.4.1 Development of Disclosure Indices

As explained in Chapter 1, the purpose of this thesis is to identify the communication of all key risk factors experienced by a manufacturing listed company in Australia, Indonesia, Malaysia, and Singapore. To achieve the research objective, this thesis generates the RDI index measuring the extent of risk disclosure by manufacturing listed firms.

This section explains the evolution to create the final Risk Disclosure Index (RDI). This evolution consists of three stages as detailed in Table 4.1.

Table 4.1: Creation of the Final Risk Disclosure Index (RDI)

Stage	Detailed Explanation
Stage 1 (past studies)	An extensive review of prior studies is undertaken to check for commonalities across the studies and initially identify items that are linked with risk disclosures. These items are utilized in this thesis to derive the preliminary benchmark disclosure checklist. A preliminary 42 item checklist is created.
Stage 2 (mandatory rules)	The preliminary disclosures checklist is first subject to a thorough screening in order to ensure individual items are not mandatory. This screening of the voluntary risk disclosure checklist is done with reference to International Accounting Standards Board (IASB) mandatory risk disclosures and any known mandatory risk disclosure countries rules in Australia, Indonesia, Malaysia, and Singapore. This screening of the voluntary risk disclosure checklist is done via a pilot study process. A pilot study is conducted by sampling five companies in each country to search for any mandatory disclosures from IFRS 7, IFRS 9, and IAS 32 which must be removed from the final Risk Disclosure Index (RDI).
Stage 3 (final RDI)	The pilot study reveals that eight items from the original 42 items are mandatory and should be removed from the preliminary Risk Disclosure Index (RDI). This procedure lead to the final selection of voluntary risk disclosure items. The final Risk disclosure Index (RDI) consist of 34 items Risk Disclosure Index (RDI) items (42 - 8 = 34).

4.4.1.1 Stage 1: Benchmarking from Prior Studies

The first stage is the extensive review of prior studies to check for commonalities across the studies and identify items that are linked with risk disclosures. The use of a disclosure index to measure the extent of disclosure can be traced to the work of Solomon (2000), Linsley and Shrives (2005a), Hill and Short (2009) who use The Turnbull Report[16], Suhardjanto (2008) who uses The Global Report Initiative (GRI)[17], Akhigbe and Martin (2008) who use Sarbanes-Oxley Act[18], as a benchmark to gauge the extent of disclosure. The Voluntary Disclosure Instrument (VDIS) of Ho (2009) and Voluntary Disclosure Checklist of Gray, Meek, and Roberts (1995) are also utilized in this thesis to derive the original preliminary benchmark disclosure checklist.

4.4.1.2 Stage 2: Mandatory Items Removed

There are some rules about risk disclosure that have become mandatory by 2007 (first thesis sample year). This screening of the voluntary risk disclosure checklist is done with reference to International Accounting Standards Board (IASB) mandatory risk disclosure, and the mandatory risk disclosure countries rules in Australia, Indonesia, Malaysia, and Singapore.These mandatory rules need to be excluded from the checklist to evolve the final risk disclosure index (RDI).

This thesis has conducted a pilot study sampling five companies in each of the four sample countries to detect any mandatory disclosure index in IFRS 7, IFRS 9, and IAS 32 (relation to financial instruments disclosures)

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[16] Turnbull report 1999 is a guidance initiated by the Internal Control Working Party of the Institute of Chartered Accountants in England & Wales (ICAEW) that is based on the adoption by a company's board of a risk-based approach (Turnbull 1999).

[17] The GRI provides a careful framework for the application of sustainable reporting with the integrated indicators capturing multiple dimensions and companies widely accepting around the world (Suhardjanto 2008). GRI suggests guidelines for core content for reporting and are applicable to all organizations. The guidelines outline a disclosure framework that organizations can voluntarily adopt (GRI 2009).

[18] Sarbanes-Oxley Act of 2002 is designed to assist investors by bettering the accuracy and reliability of corporate disclosures to the securities laws.

which must be removed from the final Risk Disclosure Index (RDI). A pilot study was conducted. The pilot study reviewed a total of 60 annual reports consisting of five companies in each of the four countries over the entire three year time span of 2007-2009 (5 x 4 x 3 = 60). The pilot study used a benchmark checklist from the initial 42 RDI items and applied them to these 60 annual reports. The aim of the pilot study is to better understand how companies disclose their risk information as linked to the risk mandatory rules in IFRS 7, IFRS 9, and IAS 32.

Further examination reveals that IFRS 9 is not relevant to the RDI, because the effective date of IFRS 9 is set in the future (1 January 2013). In other words, it is not a mandatory until 1 January 2013. IAS 32 is also not relevant for the RDI. The financial instruments disclosures are in IFRS 7 and no longer in IAS 32. Only IFRS 7 is relevant to the RDI. IFRS 7 establishes principles for presenting financial instruments as liabilities or equity and for offsetting financial assets and financial liabilities. IFRS 7 mandates certain disclosures of financial instrument information (IAS-Plus 2009). Therefore, all risk related disclosure items made mandatory via IFRS 7 (five items) are removed from this thesis Risk Disclosure Index (RDI).

This screening of the voluntary risk disclosure checklist is also done with reference to the mandatory risk disclosure countries rules in Australia, Indonesia, Malaysia[19], and Singapore. Three items from the preliminary Risk Disclosure (RDI) are removed because they are mandatory in at least one of the sample countries.

Overall, eight items are removed from the preliminary Risk Disclosure Index (RDI).

[19] The Malaysia regulations regarding mandatory risk disclosure based on the 15.26 and 15.27 listing requirement issued by Bursa Malaysia: Disclosure in Relation to the Malaysian Code on Corporate Governance and the State of Internal Control (Bursa Malaysia 2001).

4.4.1.3 Stage 3: Final RDI

The pilot study reveals that eight items from the original 42 items variant of the Risk Disclosure Index (RDI) are mandatory and should be removed from the final Risk Disclosure Index (RDI).

Eight items are considered mandatory because of mandatory risk disclosure countries rules in Australia, Indonesia, Malaysia, and Singapore and the IFRS 7 standard. These are:

1. In assessing what constitutes a sound system of internal control, deliberation should include the nature and extent of the risks facing the organization;
2. The system of internal control should be capable of responding quickly to evolving risks;
3. Directly or indirectly, including through any subsidiary, to extend or maintain credit, to arrange for the extension of credit, or to renew an extension of credit, in the form of a personal loan to or for any director or executive officer of that issuer;
4. Effect of foreign currency fluctuations on current result-qualitative;,
5. Effect of foreign currency fluctuations on future result-qualitative;
6. Effect of interest rate on current results;
7. Effect of interest rate on future result; and
8. Made or provided in the ordinary course of the consumer credit business of such issuer; of a type that is generally made available by such issuer to the public.

The finding leads to the final selection of disclosure items. The final list is a 34 item Risk Disclosure Index (RDI) (42 - 8 = 34).

Finally, the RDI for a manufacturing listed company for each year is computed based on the checklist. The scores of “1” are assigned to items disclosed in each company’s annual reports. They are added and equally weighted to derive a final score for each year. The Risk Disclosure Index

score (RDI) ranges in percentage from 0-100% as a metric calculation. The RDI, calculated for each company in each year, is as follows:

$$\text{RDI} = \frac{\sum \text{items disclosed per each company}}{\text{34 item RDI}^{20}} \times 100\%$$

The above RDI calculation is the primary measure of the dependent variable used in this thesis.

4.5 Independent and Control Variables

The measurement techniques adopted in this thesis for the independent variables (country, company size, managerial ownership, board independence) have been consistently utilized by prior studies. For example: country (Soewarso et al. 2003; Astami and Tower 2006), size (Haniffa and Cooke 2002; Linsley et al. 2006; Cheng and Courtenay 2006; Abraham and Cox 2007; Atan and Maruhun 2009), managerial ownership (Chen and Steiner 1999; Gelb 2000; Eng and Mak 2003; Makhija and Patton 2004; Baek et al. 2009), and board independence (Chen and Jaggi 2000; Eng and Mak 2003; Patelli and Prencipe 2007; Akhigbe and Martin 2008).

These techniques are detailed in this section as summarized in Table 4.2.

[20] Clear non-applicable items are removed from the computation.

Table 4.2: Measurement Techniques for the Independent and Control Variables

Independent and Control Variables	Measurement	Type of Data
Independent Variables:		
Country	1 = Indonesian listed manufacturing companies 2 = Australian listed manufacturing companies 3 = Malaysian listed manufacturing companies 4 = Singaporean listed manufacturing companies	Categorical
Company size	Total assets (log)[21]	Continuous
Managerial ownership	Percentage of managerial ownership	Continuous
Board independence	Percentage of independent directors[22]	Continuous
Control Variables:		
Age of business	Number of years from inception	Continuous
Auditor	1 = if big 4 auditor 0 = if non big 4 auditor	Categorical
Leverage	Total liabilities divided by total assets	Continuous
Profitability (ROA)	Net profit divided by total assets	Continuous

Country is measured by simple nominal categories as 1 if Indonesian, 2 if Australian, 3 if Malaysian, and 4 if Singaporean listed manufacturing companies. Company size is measured by the companies' total assets in U.S dollars and logged to reduce skewness. Managerial ownership is measured by the percentage of managerial ownership. Board Independence is calculated by the percentage of board independence.

This study also examines age of business, auditor, leverage, and profitability as control variables to be included in the statistical analysis. Those control variables are consistently utilized in prior research. For examples: age of business (Hill and Short 2009), auditor (Lee et al. 2003; Wang et al. 2008), leverage (Eng and Mak 2003; Abraham and Cox 2007;

[21] Company size is measured by total assets at the end of the financial year in US$ and logged to reduce skewness.

[22] In this thesis the board in Indonesia refers to the board of commissioners (dewan komisaris) rather than the less important board of directors (direksi).

Akhigbe and Martin 2008; Atan and Maruhun 2009), and profitability (Eng and Mak 2003; Cheng and Courtenay 2006).

Age of business is measured by the number of years from inception. Auditor is measured by nominal categories as 1 = if big 4 auditor and 0 = if non big 4 auditor. Leverage is measured by total liabilities divided by total assets. Lastly, profitability (ROA) is measured by net profit divided by total assets.

4.6 Statistical Analysis

4.6.1 Overview

This thesis employs descriptive statistics, univariate and multivariate techniques to analyze the data. T-tests, ANOVA, correlations, and regression analysis are all used. Aside from these statistical analyses, this thesis also runs a number of tests to ensure that the statistical assumptions underpinning regression analysis, such as multicollinearity and normality, are met. The results of these assumption tests analyzed first, before the analysis of multiple regression results is undertaken. To best deal with independence of sample issues[23], regressions are run on a year-by-year basis (200 companies) and analyzed individually for each of the three separate years (2007, 2008, 2009).

4.6.2 Independent T-Test

Independent t-tests are used in this thesis to determine if there are any significant differences between the amount of disclosure on RDI and any two item categories. Independent t-test are employed to determine if the observed variation between the means of two non-related samples arise through chance or is represented by the difference between two data

[23] The problem of repeated measures in the pooled sample is taken into account. The key issue is lack of independence in the full sample. This thesis thus runs the regressions for each individual year to avoid the problem. Overall, the hypotheses testing for individual years 2007, 2008, 2009 leads to the same statistical conclusions as that of the pooled sample (see later chapters).

populations. The assumptions in applying the independent t-test are that: (a) scores in the populations are applied randomly and independent of each other, (b) there is a normal distribution and (c) the variance of the scores between two populations is equal (Williams, 1998). Independent t-tests are used in this thesis to examine the differences of RDI between big 4 and non big 4 audited firms, between any two countries, from one selected year to another, and profit/loss status.

4.6.3 Analysis of Variance

Analysis of variance (ANOVA) is “a procedure that test to determine whether differences exist between two or more population means. The name of the technique derives from the way in which the calculations are performed. That is, the technique analyzes the variance of the data to determine whether we can infer that the population means differ” (Keller 2005, P.493). ANOVA is used to compare two or more samples to determine whether the observed differences are the product of chance or systematic events. An ANOVA application is on a comparison of the differences within groups to the variance between groups. Formulated, one-way ANOVA can be defined as the total variability equal to within groups variability plus between group variability (Williams 1998). An ANOVA is used in this thesis to compare RDI of all four countries and across the three year time period.

4.6.4 Correlations

This thesis conducts a series of correlation analyses used to provide initial analysis of direction and strength of relationship between dependent, independent, and control variables. The coefficient correlation can also enable diagnosis of the problem of multicollinearity (that occurs when a coefficient correlation is greater than or equal to 0.80) (Gujarati 1995). This additional scrutiny lessens concerns about multicollinearity in the regression analysis.

4.6.5 Multiple Regression Model

Hypothesis testing is used to explain the nature of a particular potential relationship, or to prove the function between groups of the independent variables to other variables (Keller 2005). The type of relationship between two or more variables may be a correlation, comparative, or causal relationship. This thesis tests hypotheses by regression analysis to evaluate how well the model fits the data (Keller 2005). Williams (1998, P.170) notes that the purpose of multiple regression analysis is "to arrive at the best set of coefficients for the independent variables that brings the dependent values predicted from the equation as close as possible to the actual values observed".

Multiple linear regressions are used in this thesis to model how possible explanatory variables forecast the level of risk disclosures of Australian, Indonesian, Malaysian, and Singaporean manufacturing companies with RDI as the dependent variable and four independent variables (country, company size, management ownership and board independence) and control variables (age of business, auditor, leverage, and profitability). In this thesis, the main statistical method utilized to test hypotheses is the Ordinary Least Square (OLS) regression. The full equation is provided below:

$$\boldsymbol{RDI_{jt}} = \beta_0 + \beta_1 \boldsymbol{CTY_{jt}} + \beta_2 \boldsymbol{Size_{jt}} + \beta_3 \boldsymbol{ManOwn_{jt}} + \beta_4 \boldsymbol{BoardInd_{jt}} + \beta_5 \boldsymbol{Lev_{jt}} + \beta_6 \boldsymbol{Prof_{jt}} + \beta_7 \boldsymbol{Aud_{jt}} + \beta_8 \boldsymbol{AgeBus_{jt}} + \varepsilon_{jt}$$

Where:

Dependent variable:

RDI_{jt} = risk disclosure index for company $_j$ in year $_t$;

Independent variables:

CTY_{jt} = country for company $_j$ in year $_t$ as measured as if 1 = Indonesia listed manufacturing companies, 2 = Australia listed manufacturing companies, 3 = Malaysia listed manufacturing companies, 4 = Singapore listed manufacturing companies;

$Size_{jt}$ = company size for company $_j$ in year $_t$ as measured by total assets (natural log);

$ManOwn_{jt}$ = managerial ownership for company $_j$ in year $_t$ as measured by percentage of managerial ownership;

$BoardInd_{jt}$ = board independent for company $_j$ in year $_t$ as measured by percentage of independent directors;

Control variables:

Lev_{jt}	= leverage for company $_j$ in year $_t$ as measured by total liabilities divided by total assets;
$Prof_{jt}$	= profit for company $_j$ in year $_t$ as measured by net profit divided by total assets;
Aud_{jt}	= auditor for company $_j$ in year $_t$ as measured as if 1 = if big 4 auditor, 0 = if non big 4 auditor;
$AgeBus_{jt}$	= age of business for company $_j$ in year $_t$ as measured by number of years from inception;
β_0	= intercept;
$\beta_{1\text{-}8}$	= estimated coefficient for each item;
ε_{jt}	= error term

4.7 Sensitivity Analysis and Additional Analysis

Sensitivity analysis is conducted in Chapter 6 to provide further testing of the data relating to the three research questions and hypotheses. It provides additional insights into the dependent variable(s). The purpose of this thesis sensitivity analysis is to test if differing proxy measures of the variables change the end statistical analysis conclusions. Therefore, alternate measures are examined for all four key independent variables (country, size, managerial ownership and board independence). Country in the sensitivity analysis is re-measured by GDP per capita, as well as categorized as an impact of GFC and based on the ex-colonial, country law, and board system practice. Size in sensitivity analysis regression is then re-measured by log total revenue. Managerial ownership in the sensitivity analysis is categorized 0 if it has ≤ 15% managerial ownership and 1 if it has > 15% managerial ownership, and categorized 0 if it has ≤ 50% managerial ownership and 1 if it has > 50% managerial ownership. Board independence as a corporate governance proxy is remeasured by the number of board meetings.

There are also additional analyses conducted in this thesis to better explore the risk disclosure phenomenon. The first additional analysis separates the Risk Disclosure Index (RDI) into its key component parts. The five key sub-categories are: business, strategy, operating, market, and credit risk disclosure (see Section 3.6.1 for definitions). An assessment of the extent of disclosures of each of these categories of information over the three-year period and four countries through

additional descriptive and multiple regressions is then conducted. This generates more insights into the communication of corporate risk. Second, further additional analysis looks at change over time by examining the association in risk disclosure change and the independent and control variables change over the different years of the GFC. The third additional analysis conveys the association of the change of the five sub-categories of RDI with predictor variables change over time.

4.8 Summary

This thesis longitudinally examines risk disclosures within 600 annual reports of manufacturing listed companies in Australia, Indonesia, Malaysia, and Singapore for the 2007-2009 financial years. This is an important period to investigate risk disclosure as it encompasses the years of the impact of the global crisis. Empirical and cross country analysis tests the veracity of agency theory to predict disclosure in a positivist quantitative approach. A comprehensive RDI checklist is adopted with several key predictor variables - country, size, management ownership and independent directors - used to predict the extent of such communication over time. T-tests, ANOVA, and correlations and regression analysis techniques are applied for the statistical testing.

The following chapters present the descriptive statistical analysis for all the key variables (Chapter 5); followed by the statistical results from testing of hypotheses (Chapter 6) and then additional analysis (Chapter 7).

CHAPTER 5

DESCRIPTIVE STATISTICS AND UNIVARIATE ANALYSIS

5.1 Introduction

Chapter 5 clarifies the research approach used in this thesis. This chapter presents the descriptive statistics analysis of 600 annual reports from the sample of manufacturing companies listed in Australian Stock Exchange (ASX), Indonesian Stock Exchange (IDX), Malaysian Exchange (MYX), and Singaporean Stock Exchange (SGX) for all the thesis variables. The chapter is organized as follows: Sections 5.2 describes the descriptive statistics of the predictor variables: independent variables (country, company size, managerial ownership, board independence) and control variables (leverage, profitability, auditor, age of business) respectively; Sections 5.3 highlights the key descriptive statistical findings of the overall RDI respectively; Section 5.4 provides univariate analysis using t-tests and ANOVA with RDI and five major sub-categories of RDI; and Section 5.5 summaries the chapter findings.

5.2 Descriptive Statistics (independent variables and control variables)

This session conveys the descriptive statistic of key variables. It highlights the predictor variables. Concurrently there are four independent variables (country, company size, managerial ownership, board independence) and four control variables (leverage, profitability, auditor, age of business) analyzed. There are two categorical variables: country (independent variable) and auditor (control variable). Country (CTY) is categorized as 1 if Indonesian listed manufacturing companies, 2 if Australian, 3 if Malaysian, and 4 if Singaporean. Auditor (AUD) is categorized as 1 if big 4 auditor or 0 if non big 4 auditor. The three continuous independent variables employed in this thesis are firm size (Size), managerial

ownership (ManOwn) and board Independence (BoardInd). Log firm size (SIZE) is calculated as the natural log of companies' total assets. Managerial ownership (ManOwn) is measured as the percentage of managerial ownership from managerial shares divided by total shares. Board independence (BoardInd) is measured as the percentage of board independence in companies which is the number of members independent board are divided by total board members in the company. There are also three continuous control variables; these are leverage, profitability and age of business. Leverage (Lev) is calculated as total liabilities divided by total assets. Profitability (Prof) is calculated by net profit divided by total assets. Age of business (AgeBus) is measured as number of years from inception.

Table 5.1 provides a summary of the descriptive statistics for the explanatory continuous variables for the entire GFC period 2007-2009. Each year represents 200 companies, over the three year period of 2007-2009, with a total sample of 600 annual report firm years.

Table 5.1: Descriptive Statistics: 2007, 2008, 2009, and Pooled Data

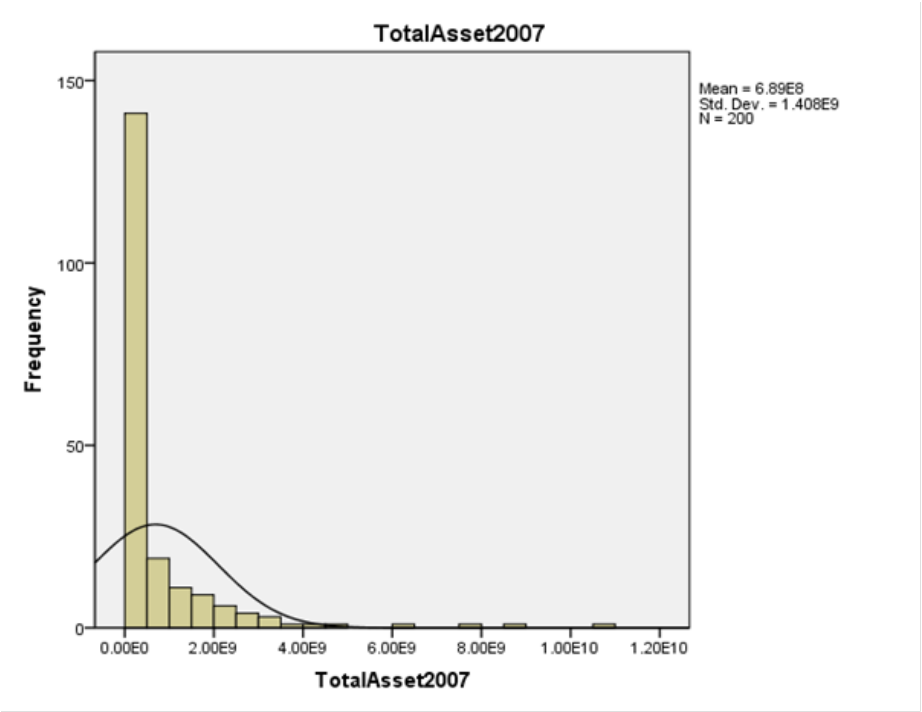
Continuous Variables	Mean	Median	Min	Max	St Dev
Panel A 2007 (n = 200)					
Size (natural log)	7.77	7.97	2.94	10.04	1.40
Size (in US$)	689,310,000	148,140,000	1,944,788	11,000,000,000	1,407,990,000
ManOwn (%)	12.84	1.67	0.00	78.00	18.81
BoardInd (%)	40.61	40.00	0.00	100.00	20.13
Lev (%)	46.10	47.21	0.00	230.00	27.12
Prof (%)	2.38	5.82	-173.00	58.00	23.69
AgeBus (years)	30.44	24.00	1.00	144.00	27.82
Panel B 2008 (n = 200)					
Size (natural log)	7.82	8.05	3.18	10.07	1.40
Size (in US$)	813,310,000	154,560,000	1,801,030	11,600,000,000	172,989,000
ManOwn (%)	11.45	1.40	0.00	78.00	17.74
BoardInd (%)	42.10	40.00	0.00	90.00	19.86
Lev (%)	48.29	47.79	1.00	288.00	31.24
Prof (%)	-2.09	3.38	-373.00	55.00	32.99
AgeBus (years)	31.44	25.00	2.00	145.00	27.82
Panel C 2009 (n = 200)					
Size (natural log)	7.84	8.10	3.33	10.09	1.43
Size (in US$)	867,080,000	168,160,000	861,705	12,300,000,000	176,243,000
ManOwn (%)	11.54	1.31	0.00	76.00	18.12
BoardInd (%)	42.93	41.00	0.00	100.00	20.71
Lev (%)	45.31	41.21	1.00	272.00	31.18
Prof (%)	0.03	4.22	-125.00	52.00	21.81
AgeBus (years)	32.44	26.00	3.00	146.00	27.82
Panel D Pooled (n = 600)					
Size (natural log)	7.81	8.03	2.94	10.09	1.41
Size (in US$)	789,900,000	156,100,000	861,705	12,300,000,000	164,020,000
ManOwn (%)	11.94	1.47	0.00	78.00	18.21
BoardInd (%)	41.88	40.00	0.00	100.00	20.23
Lev (%)[15]	46.56	45.88	0.00	288.00	29.88
Prof (%)[24]	0.02	4.28	-373.00	58.00	26.63
AgeBus (years)	31.44	25.00	1.00	146.00	27.78

According to Table 5.1, the average firm size for the four countries (Australia, Indonesia, Malaysia, Singapore) manufacturing listed companies over the years in U.S Dollar is $789,900,000 (see Panel D), the average firm size over the three year period is increasing, ranging from $689,310,000 in 2007 (Panel A), $813,310,000 in 2008 (Panel B) and

[24] For profitability, there are three companies: Coretrack in 2007, Jade Technologies in 2008, Peel exploration in 2009 that are have unusually large loss figures. Similarly, Asia Pacific Fiber Company has a leverage figure above 100%. These figures have been rechecked and reconfirmed and are correct.

$867,080,000 in 2009 (Panel C). However, the median scores are far lower and a histogram (see Figure 5.1a-d) shows that size is heavily skewed to the left. Consequently, firm size is recomputed as the natural log of total assets (see Figure 5.1a-d), ranging between 7.77– 7.84. This is consistent with many past financial accounting studies. The lowest level of managerial ownership for countries' manufacturing companies is in 2008 (11.45%) this has fallen from 2007 whereas the highest board independence occurs in 2009 (42.93%) this has risen from 40.61% and 42.10% in the earlier two years (see Table 5.1) consistent with governance principles, the independence of the boards increases over time during the GFC crisis period. The control variables also change over time. The average company financial leverage is 46.56% ranging from 45.31% to 48.29%. The highest leverage level in 2008 is a worrying development during the GFC crisis period. The profitability variable has fallen in 2008 and increases slowly in 2009. The median average year profit is 4.28%. The average age of business is 31.44 years (see Table 5.1 panel D).

Figure 5.1a: Size and log Size Histogram (with normal curves) 2007



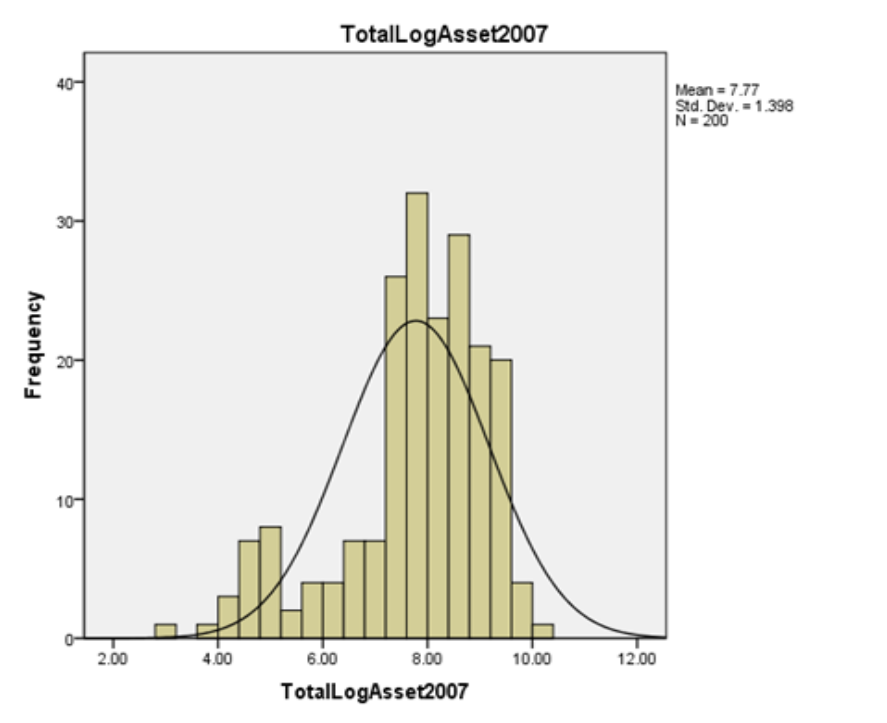


Figure 5.1b: Size and log Size Histogram (with normal curves) 2008

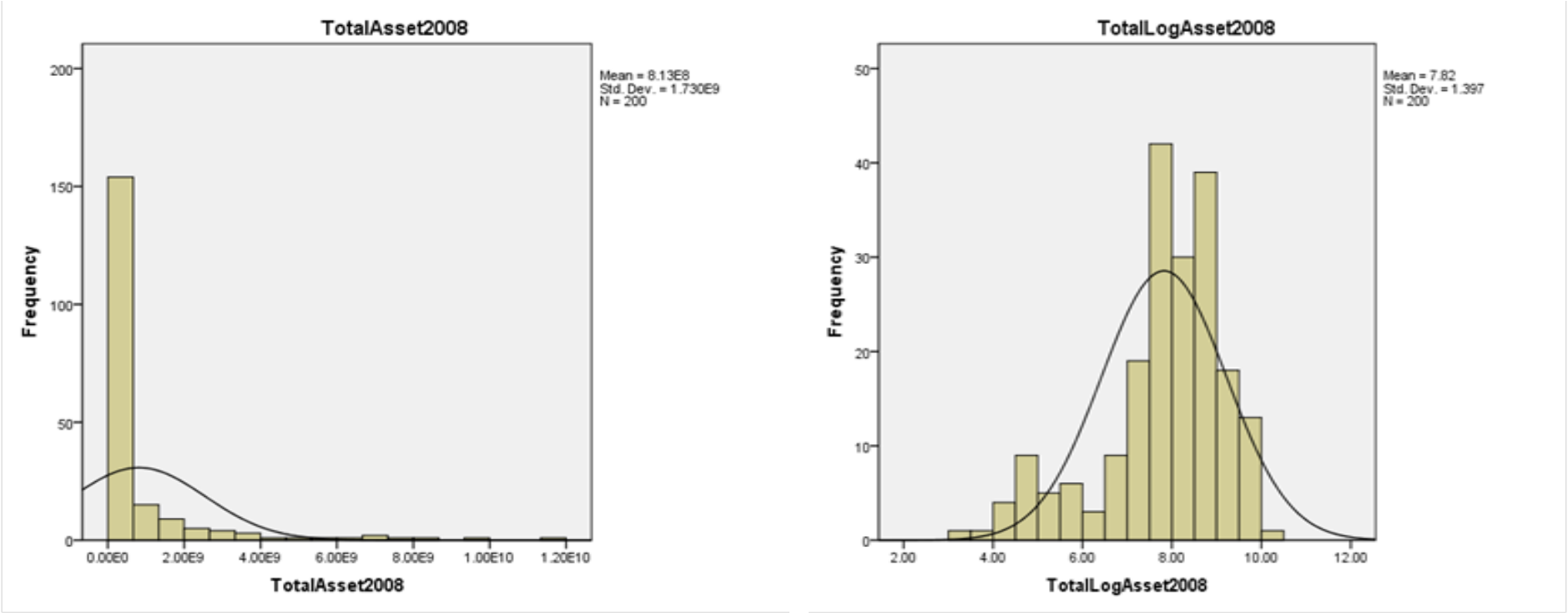
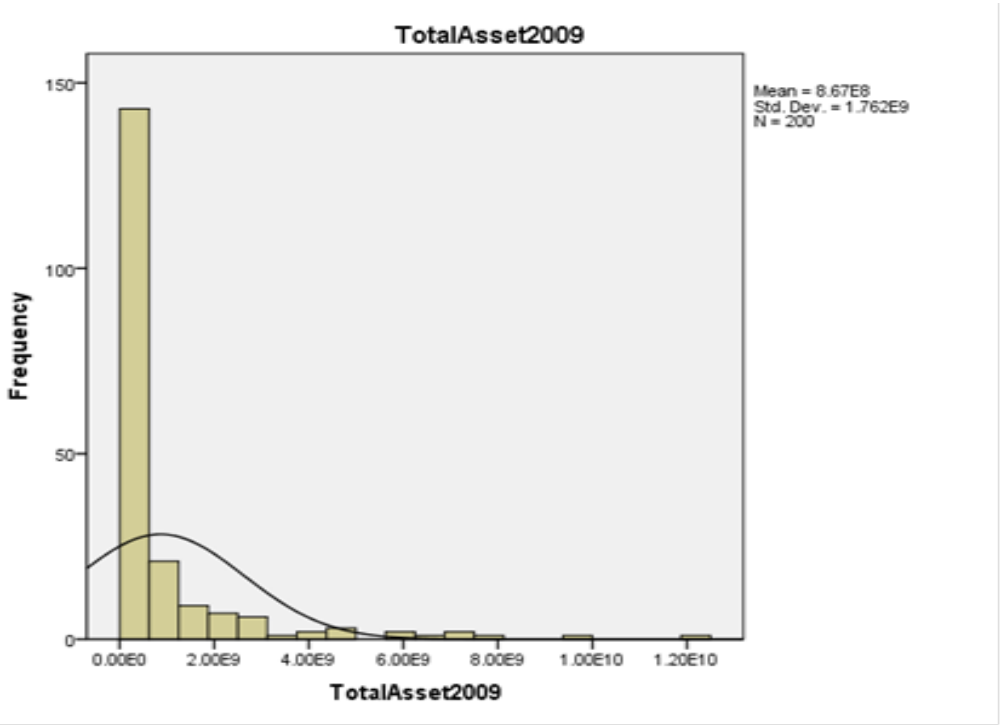


Figure 5.1c: Size and log Size Histogram (with normal curves) 2009



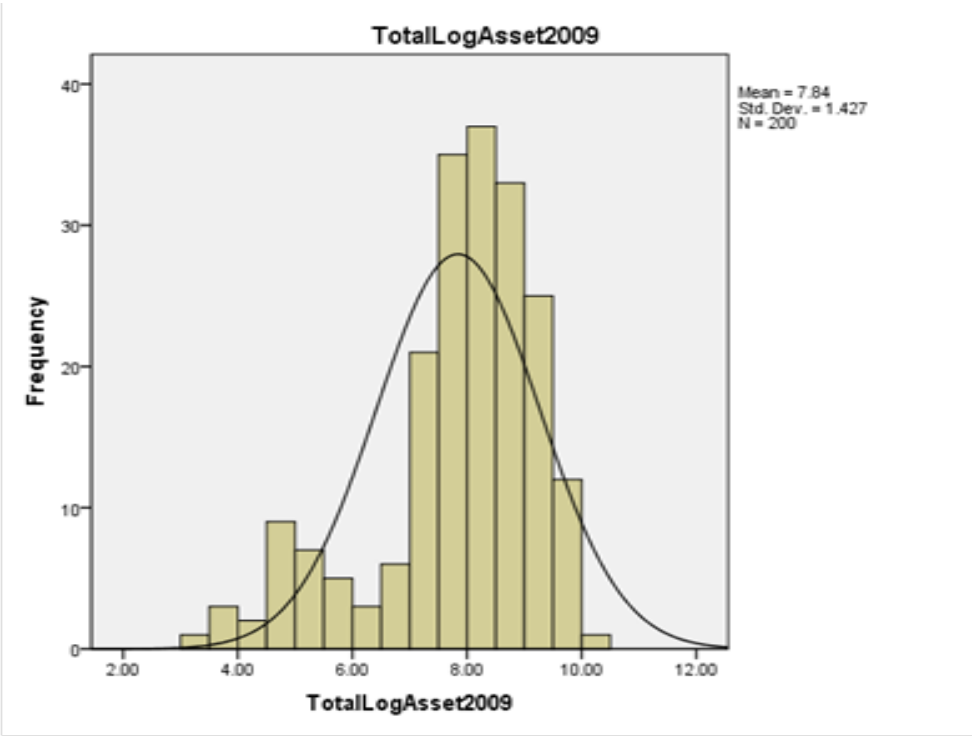
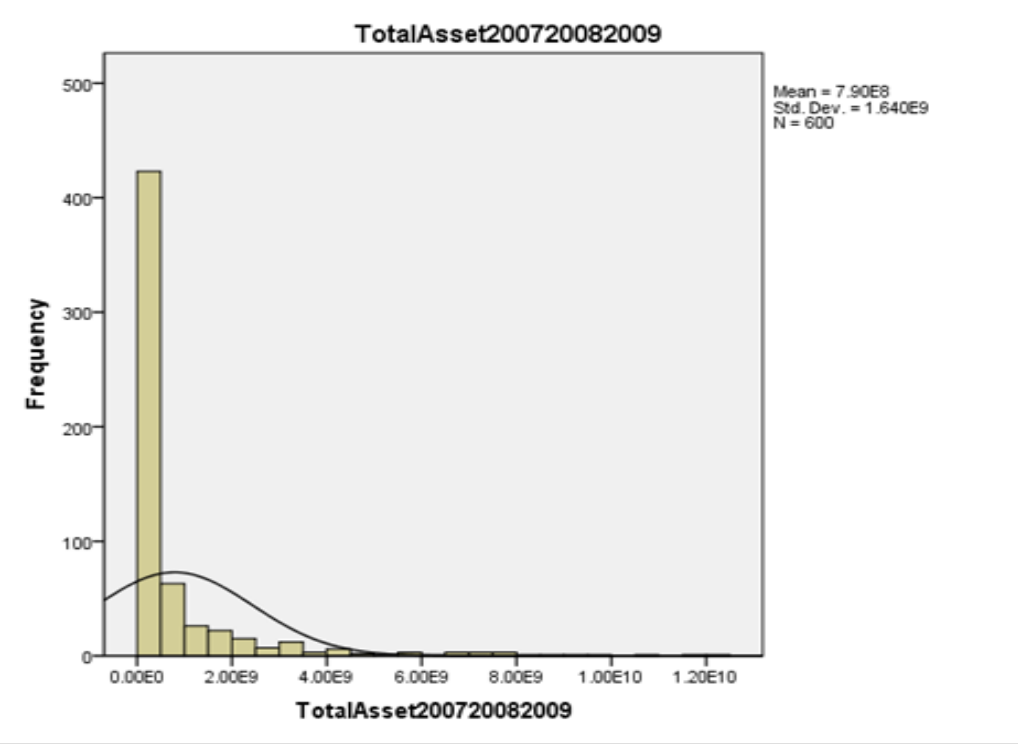


Figure 5.1d: Size and log Size Histogram (with normal curves) Pooled



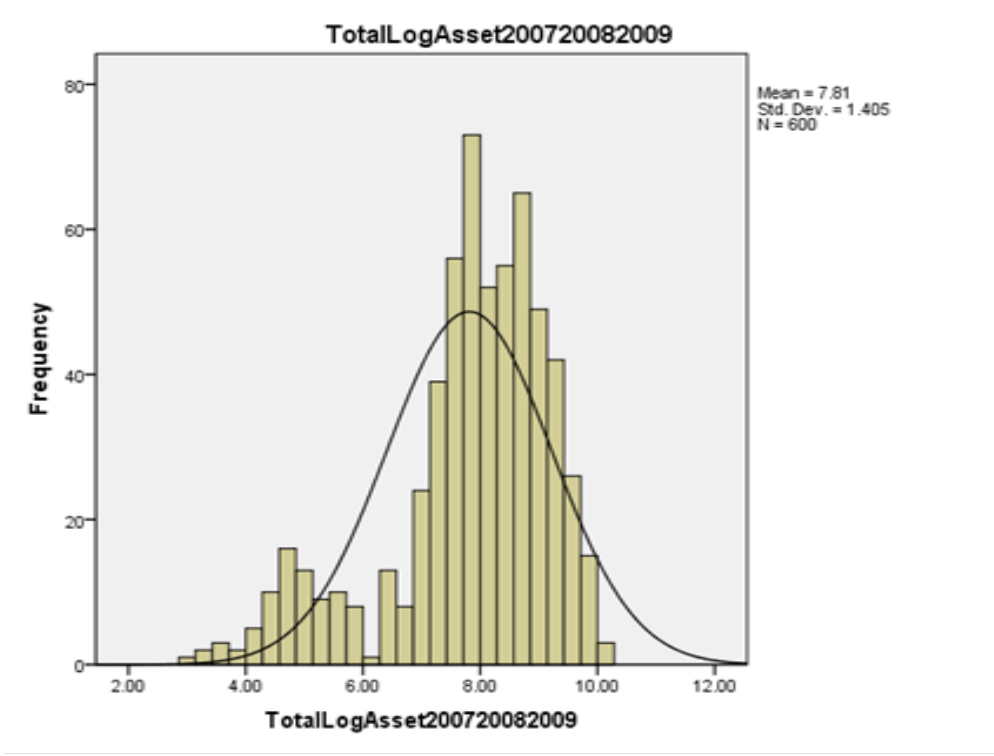


Table 5.2: Predictor Variables by Country: ANOVA

Predictor variables	Country	N	Mean	F	Sig.
Size	Indonesia	150	595,770,000	4.186	.006*
	Australia	150	1,143,400,000		
	Malaysia	150	557,920,000		
	Singapore	150	862,530,000		
	Total	600	789,900,000		
ManOwn	Indonesia	150	.0232	22.205	.000*
	Australia	150	.1584		
	Malaysia	150	.1271		
	Singapore	150	.1691		
	Total	600	.1194		
BoardInd	Indonesia	150	.3999	2.102	.099***
	Australia	150	.4021		
	Malaysia	150	.4514		
	Singapore	150	.4219		
	Total	600	.4188		
AgeBus	Indonesia	150	42.9400	12.665	.000*
	Australia	150	29.8800		
	Malaysia	150	27.0400		
	Singapore	150	25.9000		
	Total	600	31.4400		
Lev	Indonesia	150	.5771	10.256	.000*
	Australia	150	.4037		
	Malaysia	150	.4439		
	Singapore	150	.4378		
	Total	600	.4656		
Prof	Indonesia	150	.0594	16.230	.000*
	Australia	150	-.1224		
	Malaysia	150	.0492		
	Singapore	150	.0221		
	Total	600	.0021		

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

To obtain a better understanding of the sample firms' characteristics Table 5.2 displays the results of one-way analysis of variance (ANOVA) between continuous predictor variables and the four sample countries. There are

highly significant differences ($p < 0.010$) for firm size, managerial ownership, age of business, leverage, and profitability and a moderately significant difference ($p < 0.100$) for board independence. The findings show different characteristics of companies across countries.

Table 5.2 descriptive analysis by country between the predictor variables shows that the highest firm size is in Australian manufacturing companies (1,143,400,000) and the lowest firm size is for Malaysian companies (557,920,000). The highest managerial ownership is in Singaporean manufacturing companies (16.91%) then Australian companies (15.84%) and then Malaysian companies (12.71%) with the lowest being Indonesian companies with a mean of 2.32%. The highest board independence is in Malaysian companies (45.14%) and the lowest board independence is for Indonesian companies (39.99%). The age of business mean for Indonesian manufacturing companies is 42.94 years, this falls to Australian 29.88, Malaysian 27.04 and Singaporean 25.90 years. The highest company leverage is in Indonesian companies with a mean of 57.71% and Australian companies have the lowest company leverage with a mean of 40.37%. Australian companies profit has the lowest average with a mean of -12.24% as compared with Indonesian companies with a higher mean 5.94%, Malaysian 4.92%, and Singaporean 2.21%.

Post hoc Tukey analysis (see Appendix A.1) provides evidence that for firm size, Australian manufacturing listed firm size is significantly higher than Indonesian and Malaysian. For managerial ownership, Indonesian manufacturing listed companies is statistically lower than all three other countries' manufacturing listed companies. Appendix A.1 also shows that Indonesian age of business is significantly higher than the three other countries. Indonesian manufacturing listed companies leverage is significantly higher than three other countries companies' leverage. Finally, Australian companies' profit mean is statistically significantly lower than all three other sample countries.

Table 5.3: Predictor Variables by Year: ANOVA

Predictor variables	Year	N	Mean	F	Sig.
Size	2007	200	689,310,000	.617	.540
	2008	200	813,310,000		
	2009	200	867,080,000		
	Total	600	789,900,000		
ManOwn	2007	200	.1284	.366	.694
	2008	200	.1145		
	2009	200	.1154		
	Total	600	.1194		
BoardInd	2007	200	.4061	.675	.510
	2008	200	.4210		
	2009	200	.4293		
	Total	600	.4188		
AgeBus	2007	200	30.4400	.258	.772
	2008	200	31.4400		
	2009	200	32.4400		
	Total	600	31.4400		
Lev	2007	200	.4610	.533	.587
	2008	200	.4829		
	2009	200	.4531		
	Total	600	.4656		
Prof	2007	200	.0238	1.401	.247
	2008	200	-.0207		
	2009	200	.0030		
	Total	600	.0021		

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Table 5.3 provides the result of ANOVA by year. Comparing the mean of firm characteristic predictor variables within a year reveals that none differ significantly ($p > 0.100$). The findings show a similar trend from each predictor variables from 2007 to 2009. Table 5.3 also displays that the highest leverage level is in 2008 and the lowest level of profit occurs in 2008. Post hoc Tukey for each year between the predictor variables (see Appendix A.2) shows that there is no statistically significant predictor variables (size, managerial ownership, board independence, leverage, profit, age of business) in 2007, 2008 or 2009.

Table 5.4: Predictor Variables by Country and Year: ANOVA

Panel A 2007					
Predictor variables	**Country**	**N**	**Mean**	**F**	**Sig.**
Size 2007	Indonesia	50	527.860.000	1.183	.317
	Australia	50	930.220.000		
	Malaysia	50	486.670.000		
	Singapore	50	812.490.000		
	Total	200	689.310.000		
ManOwn 2007	Indonesia	50	.0295	7.945	.000*
	Australia	50	.1809		
	Malaysia	50	.1228		
	Singapore	50	.1805		
	Total	200	.1284		
BoardInd 2007	Indonesia	50	.3856	.875	.455
	Australia	50	.3872		
	Malaysia	50	.4428		
	Singapore	50	.4088		
	Total	200	.4061		
AgeBus 2007	Indonesia	50	41.9400	4.169	.007*
	Australia	50	28.8800		
	Malaysia	50	26.0400		
	Singapore	50	24.9000		
	Total	200	30.4400		
Lev 2007	Indonesia	50	.5706	4.252	.006*
	Australia	50	.3930		
	Malaysia	50	.4262		
	Singapore	50	.4541		
	Total	200	.4610		
Prof 2007	Indonesia	50	.0564	4.365	.005*
	Australia	50	-.0772		
	Malaysia	50	.0439		
	Singapore	50	.0722		
	Total	200	.0238		

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Panel B 2008					
Predictor variables	**Country**	**N**	**Mean**	**F**	**Sig.**
Size 2008	Indonesia	50	521.970.000	2.304	.078***
	Australia	50	1.314.500.000		
	Malaysia	50	554.020.000		
	Singapore	50	862.770.000		
	Total	200	813.310.000		
ManOwn 2008	Indonesia	50	.0134	8.369	.000*
	Australia	50	.1504		
	Malaysia	50	.1296		
	Singapore	50	.1644		
	Total	200	.1145		
BoardInd 2008	Indonesia	50	.3864	.992	.398
	Australia	50	.4174		
	Malaysia	50	.4544		
	Singapore	50	.4258		
	Total	200	.4210		
AgeBus 2008	Indonesia	50	42.9400	4.169	.007*
	Australia	50	29.8800		
	Malaysia	50	27.0400		
	Singapore	50	25.9000		
	Total	200	31.4400		
Lev 2008	Indonesia	50	.5971	3.173	.025**
	Australia	50	.4259		
	Malaysia	50	.4598		
	Singapore	50	.4486		
	Total	200	.4829		
Prof 2008	Indonesia	50	.0325	2.931	.035**
	Australia	50	-.1295		
	Malaysia	50	.0417		
	Singapore	50	-.0274		
	Total	200	-.0207		

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Panel C 2009					
Predictor variables	**Country**	**N**	**Mean**	**F**	**Sig.**
Size 2009	Indonesia	50	737.490.000	.938	.423
	Australia	50	1.185.400.000		
	Malaysia	50	633.080.000		
	Singapore	50	912.320.000		
	Total	200	867.080.000		
ManOwn 2009	Indonesia	50	.0265	6.069	.001*
	Australia	50	.1438		
	Malaysia	50	.1288		
	Singapore	50	.1626		
	Total	200	.1154		
BoardInd 2009	Indonesia	50	.4276	.595	.619
	Australia	50	.4016		
	Malaysia	50	.4570		
	Singapore	50	.4310		
	Total	200	.4293		
AgeBus 2009	Indonesia	50	43.9400	4.169	.007*
	Australia	50	30.8800		
	Malaysia	50	28.0400		
	Singapore	50	26.9000		
	Total	200	32.4400		
Lev 2009	Indonesia	50	.5637	3.147	.026**
	Australia	50	.3922		
	Malaysia	50	.4456		
	Singapore	50	.4108		
	Total	200	.4531		
Prof 2009	Indonesia	50	.0892	16.401	.000*
	Australia	50	-.1606		
	Malaysia	50	.0618		
	Singapore	50	.0216		
	Total	200	.0030		

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Table 5.4 (Panels A – C) document the analyses of the descriptive statistics and ANOVA testing by country and year between the predictor variables. For each year Table 5.4 shows a different trend. In 2007, there are statistical significant differences ($p < 0.010$) for managerial ownership,

age of business, leverage, and profitability. In 2008, there are significant differences ($p < 0.010$) for managerial ownership, and age of business; significant differences ($p < 0.050$) for leverage, and profitability; and moderate significant differences ($p < 0.100$) for firm size. In 2009, managerial ownership, age of business, and profitability are statistically significant different ($p < 0.010$) and leverage is significantly different ($p < 0.050$). Overall, the findings show different characteristics of companies across years and countries.

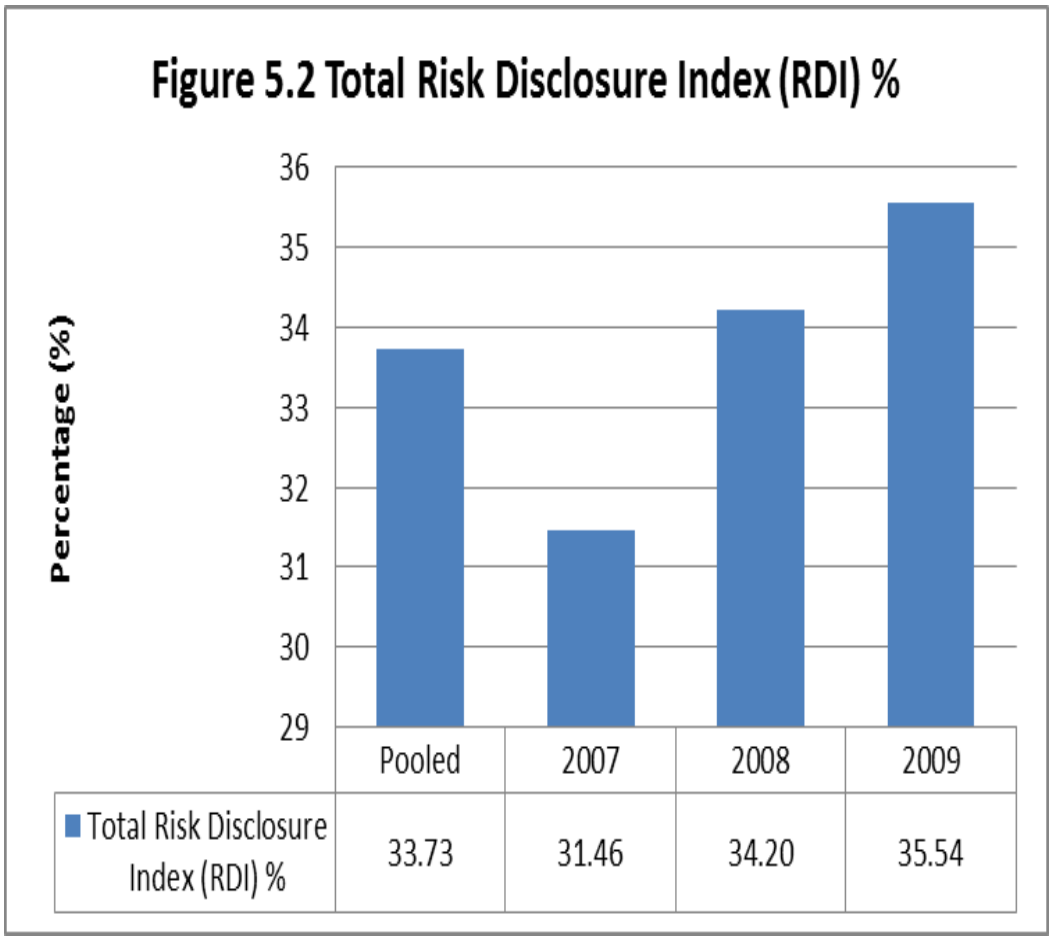
Post hoc Tukey (see Appendix A.3) further reveals that in 2007, 2008, and 2009 Indonesian manufacturing listed companies managerial ownership is significantly lower than all three other countries. The control variable analysis shows that Indonesia companies age of business is significantly higher than the three other countries in 2007, 2008, and 2009. In 2007, Indonesian companies' leverage is significantly different from Australian and Malaysian firms. The higher leverage level in 2007 rests with Indonesian companies with a mean 57.06% this is followed by Singaporean companies (45.41%) and then Malaysian (42.62%) and Australian companies' 2007 leverage is the lowest level with a mean of 39.30% (see Table 5.4 panel A). Australian leverage increases in 2008 and decreases in 2009 with means of 42.59% and 39.22% (Table 5.4 panels A and B). Respectively Australian companies profit figure is statistically significant lower than all three other countries. In 2008 Australian companies' profit drop and are significantly lower than Malaysian firms. Moreover, in 2009 Australian companies' profits are significantly lower than the three other countries.

5.3 Descriptive statistics (RDI)

As outlined in previous chapters, the extent of risk disclosure is measured in each of the three key GFC years (2007, 2008 and 2009) and pooled sample data, from which a voluntary Risk Disclosure Index score (RDI) is created for each period. The RDI comprises 34 items categorized into five key sub-categories of voluntary risk information disclosure, namely: (i)

business; (ii) strategy; (iii) operating; (iv) market; and (v) credit risk disclosure.

The descriptive statistics for the dependent variable by year in Figure 5.2 shows that overall RDI scores over the economically-challenging GFC time period is 33.73%. One third of all key risk items are communicated on average. This figure rises every year ranging from 31.46% in 2007, 34.20% in 2008, and 35.54% in 2009.



5.4 Univariate Analysis: T-Test and ANOVA with RDI and Five Sub-Categories of RDI

Table 5.5 displays the different RDI means between the 460 profit companies and 140 loss companies in term of companies' communication level of risk disclosure (mean of 28.13 - 31.54% for loss companies, and RDI mean of 32.27 - 36.80% for profit companies). Table 5.5 extends the analysis by presenting the independent sample test between profit companies and loss companies in 2007, 2008, 2009 and also in the pooled data on RDI disclosure levels. There are significant differences on RDI levels between profit companies and loss companies in 2007, 2008, 2009 and also in the pooled data. Specifically, the t-test for equality of means demonstrates that there are statistically significant differences on the level of RDI in 2007 (p-value = 0.020), 2008 (p-value = 0.000), 2009 (p-value = 0.003), and pooled data (p-value = 0.000). The results show a high level of differences between profit companies and loss companies on risk disclosure levels throughout the GFC period. Profit companies consistently have higher risk communication.

Table 5.5: Profit / Loss T-Test for RDI: 2007, 2008, 2009 and Pooled Data

Company Performance	N	RDI	Std Deviation	T-value	Sig
2007					
loss companies	39	.2813	.08591	-2.344	.020**
profit companies	161	.3227	.10178		
2008					
loss companies	53	.2921	.10199	-4.063	.000*
profit companies	147	.3600	.10516		
2009					
loss companies	48	.3154	.08958	-3.038	.003*
profit companies	152	.3680	.10882		
Pooled data					
loss companies	140	.2971	.09390	-5.231	.000*
profit companies	460	.3496	.10689		

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Table 5.6: RDI by Country ANOVA

Dependent Variable	Country	N	Mean	F	Sig.
RDI	Indonesia	150	.3020	11.907	.000*
	Australia	150	.3324		
	Malaysia	150	.3730		
	Singapore	150	.3406		
	Total	600	.3370		

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

The ANOVA test (Table 5.6) provides evidence that there is significant difference ($p<0.010$) in RDI in the annual reports based on country ($F = 11.907$). Post hoc Tukey analysis by country between the RDI (see Appendix A.4) shows that RDI between Indonesian manufacturing listed companies and Malaysian manufacturing listed companies is statistically significantly different. Malaysian companies are higher than Indonesian. Table 5.6 (descriptive statistic) further reveals that the highest RDI is with Malaysian manufacturing listed companies (37.30%) followed by Singaporean companies (34.06%), then Australian companies (33.24%) with the lowest RDI being Indonesian companies with mean 30.20%.

Table 5.7: RDI by Year ANOVA

Dependent Variable	Year	N	Mean	F	Sig.
RDI	2007	200	.3146	7.832	.000*
	2008	200	.3420		
	2009	200	.3554		
	Total	600	.3373		

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Table 5.7 highlights that in the three sample years, RDI increases. The ANOVA test in Table 5.7 reveals that there is significant difference ($p<0.010$) in disclosing RDI risk information over time (2007-2009). The analysis of Post hoc Tukey by year between the RDI (see Appendix A.5) notes that RDI 2007 is statistically significantly lower than RDI in 2008 and 2009.

Table 5.8: RDI by Country and Year: ANOVA

Panel A 2007					
Dependent Variable	**Country**	**N**	**Mean**	**F**	**Sig.**
RDI 2007	Indonesia	50	.2746	5.411	.001*
	Australia	50	.3112		
	Malaysia	50	.3520		
	Singapore	50	.3206		
	Total	200	.3146		
Panel B 2008					
Dependent Variable	**Country**	**N**	**Mean**	**F**	**Sig.**
RDI 2008	Indonesia	50	.3030	4.168	.007*
	Australia	50	.3406		
	Malaysia	50	.3774		
	Singapore	50	.3470		
	Total	200	.3420		
Panel C 2009					
Dependent Variable	**Country**	**N**	**Mean**	**F**	**Sig.**
RDI 2009	Indonesia	50	.3292	2.978	.033**
	Australia	50	.3474		
	Malaysia	50	.3904		
	Singapore	50	.3546		
	Total	200	.3554		

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Table 5.8 shows that there are significant differences ($p<0.010$ and $p< 0.050$) for RDI per year (RDI 2007, 2008 and 2009) and country. Post hoc Tukey (see Appendix A.6) reveals that in 2007, 2008, and 2009 RDI in Indonesian manufacturing listed companies are statistically significantly lower than Malaysian manufacturing listed companies. Whilst there is a consistent steady increase over time in all countries manufacturing listed companies' RDI scores that differ in each year (see Table 5.8).

Table 5.9: Risk Disclosure Index (RDI) (2007-2009)

Risk Disclosure Items	Pooled	2007	2008	2009	Trend
Total Risk Disclosure Index (RDI) [25]	33.73%	31.46%	34.20%	35.54%	Rise
Identifying , evaluating and managing risks[A]	91.17%	88.00%	92.50%	93.00%	Rises
Future prospects[E]	89.47%	90.00%	88.90%	89.50%	Varies
Major exchange rates used in the accounts[E]	88.50%	87.00%	89.00%	89.50%	Rises
Impact of strategy[E]	80.83%	80.00%	81.50%	81.00%	Varies
GAAP risks of the special purpose entity[C]	79.00%	78.00%	79.50%	79.50%	Rises
Provide consumer credit business [C]	78.97%	77.50%	78.50%	80.90%	Rises
Impact accounting policy changes[E]	62.17%	62.50%	62.00%	62.00%	Fall
External factors and company's prospect[D]	62.17%	45.00%	66.00%	75.50%	Rises
Internal control and the extent risk are acceptable[A]	60.33%	57.00%	64.00%	60.00%	Fall
Effects of disposals[E]	58.17%	57.50%	58.50%	58.50%	Rises
Effects of acquisition[E]	56.67%	56.00%	56.00%	58.00%	Rises
Impact of strategy on future[E]	48.33%	43.00%	49.00%	53.00%	Rises
Safety policy[E]	46.67%	40.50%	48.50%	51.00%	Rises
Capital project committed[E]	43.00%	38.50%	39.50%	51.00%	Rises
Major regional economic development[D]	27.17%	23.50%	29.00%	29.00%	Rises
Effects of inflation on results—qualitative [E]	24.33%	19.00%	26.00%	28.00%	Rises
Internal control, including risk[A]	22.00%	19.50%	23.50%	23.00%	Varies
Risks and opportunities due to climate change[B]	20.83%	16.00%	24.50%	22.00%	Varies
Committed expenditure for capital projects[E]	19.50%	17.00%	18.50%	23.00%	Rises
Internal control and risks[A]	13.33%	11.50%	12.50%	16.00%	Rises
Extensions of credit[C]	13.00%	10.50%	11.00%	17.50%	Rises
Safety of products[E]	12.67%	12.50%	12.50%	13.00%	Rises
Data on accidents[E]	11.83%	11.00%	11.00%	13.50%	Rises
Risks related to corruption[B]	9.17%	10.50%	7.00%	10.00%	Varies
Effects of inflation on future operation—qualitative [E]	8.67%	4.50%	12.00%	9.50%	Varies
Freedom of association risk[B]	8.00%	6.50%	8.00%	9.50%	Rises
Risk-control programs regarding serious diseases[B]	6.17%	5.50%	7.00%	6.00%	Varies
Effects of inflation on results—quantitative [E]	4.50%	2.50%	5.00%	6.00%	Rises
Supplementary inflation adjusted financial statement[D]	2.00%	1.00%	3.00%	2.00%	Varies
Risk for child labour, and elimination of child labour[B]	1.17%	1.00%	1.50%	1.00%	Varies
Incidents of forced or compulsory labour[B]	0.67%	0.50%	1.00%	0.50%	Varies
Cost of safety measures[E]	0.50%	0.50%	0.50%	0.50%	Stable
Effects of inflation on assets—qualitative [E]	0.33%	0.50%	0.00%	0.50%	Varies
Effects of inflation on assets—quantitative [E]	0.00%	0.00%	0.00%	0.00%	None

Legend: A = (Adapted from Turnbull report, 1999), B = (Adapted from Global report Initiative (GRI) 2006), C = (Adapted from Sarbanes-OxleyAct of 2002, SEC 401), D = (Adapted from the voluntary disclosure instrument (VDIS), Ho 2009), E = (Adapted from Voluntary Disclosure Checklist, Gray, Meek, and Roberts, 1995).

[25] Eight (8) items are considered mandatory because of mandatory risk disclosure IASB and IFRS regulations and the mandatory risk disclosure countries rules in Indonesia, Malaysia, Singapore and Australia and removed. 1. A sound system of internal control, deliberation should include the nature and extent of the risks [A]. 2.The system of internal control should be capable of responding quickly to evolving risks[A]. 3.Directly or indirectly, including through any subsidiary, to extend or maintain credit, in the form of a personal loan to or for any director or executive officer of that issuer [C]. 4. Effect of foreign currency fluctuations on current result-qualitative[D]. 5. Effect of foreign currency fluctuations on future result-qualitative[D];.6. Effect of interest rate on current results[D]. 7. Effect of interest rate on future results[D]. 8. Made or provided in the ordinary course of the consumer credit business of such issuer; of a type that is generally made available by such issuer to the public [C]. See Chapter 4 for more details.

Table 5.9 reveals vast disparities of communication across the various risk elements. Table 5.9 shows that the highest and the lowest risk disclosure are:

- Item "Identifying, evaluating and managing significant risks**"** has the highest level of communication (91.17%); and
- "Effects of inflation on assets quantitative'' is the lowest item with no disclosure (0 %).

Table 5.9 also notes trends over time:
These items are rising across three years:

- Identifying, evaluating and managing risks; Major exchange rates used in the accounts; GAAP risks of the special purpose entity; Provide consumer credit business; Specific external factors affecting company's prospect; Effects of disposals; Effects of acquisition; Impact of strategy on future; Safety policy; Capital project committed; Major regional economic development; Effects of inflation on results—qualitative; Committed expenditure for capital projects; Internal control and impact of risks that do materialize; Extensions of credit; Safety of products; Data on accidents; Freedom of association risk; Effects of inflation on results—quantitative.

These items are falling across 2007-2009:

- Impact accounting policy changes ; and Internal control and the extant risk are acceptable.

Other trends of RDI items according to Table 5.9 are:

- The following items vary across the three sample years: Future prospects ; Impact of strategy; Internal control, deliberation include the likelihood of risk; Risks and opportunities due to climate change; Risks related to corruption; Effects of inflation on future operation—qualitative; Risk-control programs regarding serious diseases;

Supplementary inflation adjusted financial; Risk for child labour, and elimination of child labour; Incidents of forced or compulsory labour; Effects of inflation on assets—qualitative; and

- Stable across three years are: Cost of safety measures; and Effects of inflation on assets—quantitative with no disclosure across three years.

5.4.1 Descriptive Statistics (5 Major subRDI)

Table 5.10 notes that the overall RDI scores over the economically-challenging GFC time period is 33.73%. One third of all key risk items are communicated on average. This figure rises a bit every year ranging from 31.46% in 2007, 34.20% in 2008, and 35.54% in 2009.

Table 5.10 reveals sub-categories trends. Operating risk disclosure (45.70-48.10%), business risk (44.55-48.73%) and credit risk (44.00-49.00%) are by far the highest sub-categories of risk disclosed over time, while market risk (16.24-19.27%) and strategy risk (13.81-19.50%) are consistently far lower.

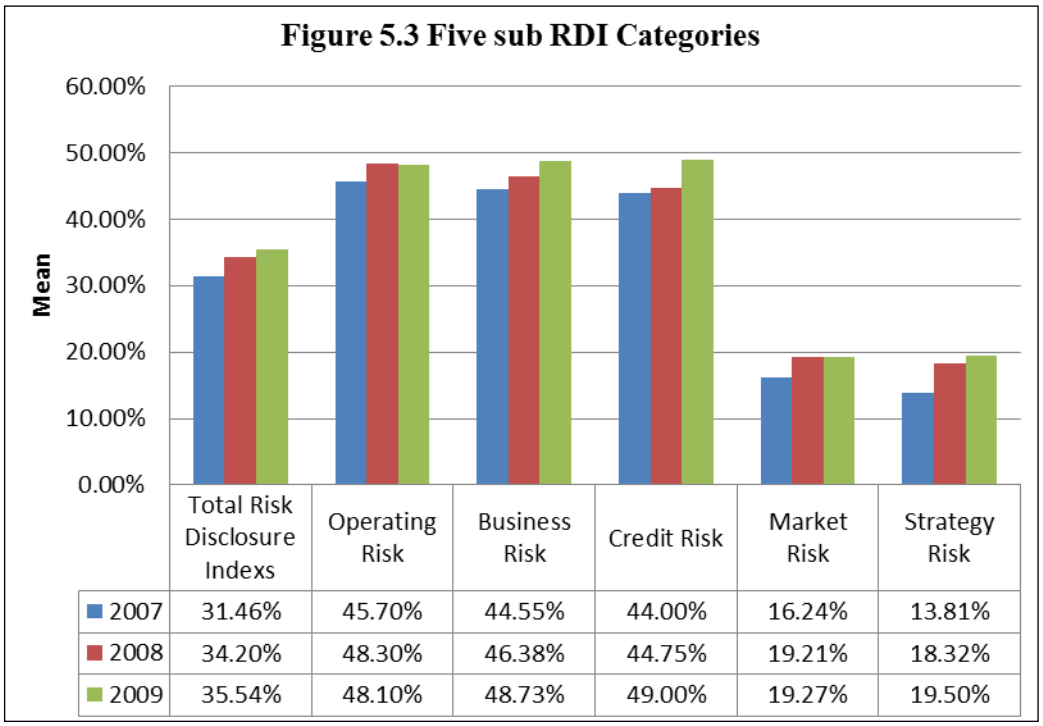
Table 5.10: Five sub Categories of Risk Disclosure Index

	Pooled (%)	2007 (%)	2008 (%)	2009 (%)	Trend
Operating Risk	47.37	45.70	48.30	48.10	Varies
Business Risk	46.55	44.55	46.38	48.73	Rises
Credit Risk	45.92	44.00	44.75	49.00	Rises
Market Risk	18.24	16.24	19.21	19.27	Rises
Strategy Risk	17.21	13.81	18.32	19.50	Rises
Risk Disclosure Index (RDI)	33.73	31.46	34.20	35.54	Rises

Figure 5.3 illustrates that these risk communication categories change over time. The lowest scores for all risk disclosure sub-categories' is in 2007; the earliest year of the crisis that affected companies. Business, credit, market, and strategy risk increase relatively consistently over the three year period, the highest averages are witnessed in 2009. For

operating risk sub-categories' the highest scores are communicated in 2008.

Figure 5.3 Five sub RDI Categories



	Total Risk Disclosure Indexs	Operating Risk	Business Risk	Credit Risk	Market Risk	Strategy Risk
2007	31.46%	45.70%	44.55%	44.00%	16.24%	13.81%
2008	34.20%	48.30%	46.38%	44.75%	19.21%	18.32%
2009	35.54%	48.10%	48.73%	49.00%	19.27%	19.50%

5.4.2 Univariate Analysis (Five Major subRDI): Country and Year

Further sub-category analysis has been conducted. ANOVA of the five sub categories of RDI (Table 5.11) by country reveals that 'business risk' (BRDI), 'strategy risk' (SRDI), 'operating risk' (ORDI), and 'market risk' (MRDI) have statistically significant country differences ($p<0.010$).

Post hoc Tukey Tables (see Appendix A.7) reveals that:

- Indonesian companies BRDI are significantly lower with all three other countries companies' BRDI score;
- Australian companies' BRDI are significantly higher than Singaporean companies' BRDI;
- Indonesian and Malaysian companies' SRDI are significantly higher than Singaporean and Australian companies' SRDI;
- Indonesian companies' ORDI are significantly lower with all three other countries companies' ORDI; and

- Finally, Australian companies MRDI is significantly lower with all three other countries companies MRDI.

Then year-by-year analysis of ANOVA (Table 5.12) is conducted with the five sub categories of RDI. The findings reveals that 'strategy risk' (SRDI) and 'market risk' (MRDI) are significantly different ($p<0.010$) across the three year sample period and 'business risk' (BRDI) is moderately significant different over time with $p<0.100$).

Post hoc Tukey (see Appendix A.8) highlights further details noting that BRDI 2007 is significantly lower with BRDI 2009, SRDI 2007 is significantly lower than SRDI 2008 and 2009. MRDI 2007 is significantly lower with MRDI 2008 and 2009. Finally, ORDI and CRDI scores are not statistically different over the three year GFC period.

Table.5.11: Descriptive and ANOVA Five sub RDI by Country

Panel A Descriptive Statistics (mean)					
Country	**BRDI**	**SRDI**	**ORDI**	**MRDI**	**CRDI**
Indonesia	.4016	.2148	.2867	.1945	.4800
Australia	.5171	.1176	.4667	.1544	.4100
Malaysia	.4806	.2034	.6160	.1921	.4700
Singapore	.4627	.1525	.5253	.1885	.4767
Total	.4655	.1721	.4737	.1824	.4592
Panel B One-way ANOVA					
	BRDI	**SRDI**	**ORDI**	**MRDI**	**CRDI**
F	11.790	18.152	65.979	4.476	2.022
Sig	.000*	.000*	.000*	.004*	.110

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, N for each country = 150, N total = 600

Table 5.12: Descriptive and ANOVA Five sub RDI by Year

Panel A Descriptive Statistics (mean)					
Year	**BRDI**	**SRDI**	**ORDI**	**MRDI**	**CRDI**
2007	.4455	.1381	.4570	.1624	.4400
2008	.4637	.1832	.4830	.1921	.4475
2009	.4873	.1950	.4810	.1927	.4900
Total	.4655	.1721	.4737	.1824	.4592
Panel B One-way ANOVA					
	BRDI	**SRDI**	**ORDI**	**MRDI**	**CRDI**
F	2.839	10.086	.719	5.053	1.791
Sig	.059***	.000*	.488	.007*	.168

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10 % level, N for each year = 200, N total = 600

Another layer of analysis is added by looking at ANOVA by country by year between the five sub categories of RDI. Table 5.13 shows that there are significant differences:

- ($p<0.010$) for BRDI 2007, SRDI 2007, ORDI 2007, SRDI 2008, ORDI 2008, SRDI 2009, ORDI 2009;
- ($p<0.050$) for BRDI 2008, BRDI 2009, MRDI 2009;
- and there are also moderate significant differences ($p<0.100$) for MRDI 2007) subcategories of RDI.

Post hoc Tukey analysis (see Appendix A.9) helps to further explain the Table 5.13 results by revealing that in 2007 Indonesian companies' BRDI are significantly lower than all three other countries companies' BRDI. In 2008 and 2009 Indonesian companies' BRDI are only significantly lower than Australian companies' BRDI. In 2007, Indonesian and Malaysian companies' SRDI are significantly higher than Singaporean and Australian companies' SRDI. In 2008 and 2009 only Australian companies are significantly lower than Indonesian and Malaysian companies' SRDI. In 2007, 2008, 2009 Indonesian companies' ORDI are significantly lower than all three other countries companies' ORDI. In 2007 and 2009 Indonesian companies' MRDI are significantly higher than Australian companies MRDI.

Table.5.13: RDI Five Sub Categories by Country by Year: ANOVA

Panel A Descriptive Statistics (mean)															
Country	**BRDI 2007**	**SRDI 2007**	**ORDI 2007**	**MRDI 2007**	**CRDI 2007**	**BRDI 2008**	**SRDI 2008**	**ORDI 2008**	**MRDI 2008**	**CRDI 2008**	**BRDI 2009**	**SRDI 2009**	**ORDI 2009**	**MRDI 2009**	**CRDI 2009**
Indonesia	.3584	.1920	.2640	.1908	.4300	.4132	.2126	.2920	.1818	.4600	.4332	.2398	.3040	.2110	.5500
Australia	.5078	.0770	.4280	.1418	.3900	.5136	.1302	.4840	.1710	.4100	.5298	.1456	.4880	.1504	.4300
Malaysia	.4648	.1682	.6160	.1554	.4700	.4736	.2262	.6080	.2108	.4500	.5034	.2158	.6240	.2102	.4900
Singapore	.4508	.1152	.5200	.1614	.4700	.4546	.1636	.5480	.2048	.4700	.4828	.1788	.5080	.1992	.4900
Total	.4455	.1381	.4570	.1623	.4400	.4638	.1832	.4830	.1921	.4475	.4873	.1950	.4810	.1927	.4900
Panel B One-way ANOVA															
	BRDI 2007	**SRDI 2007**	**ORDI 2007**	**MRDI 2007**	**CRDI 2007**	**BRDI 2008**	**SRDI 2008**	**ORDI 2008**	**MRDI 2008**	**CRDI 2008**	**BRDI 2009**	**SRDI 2009**	**ORDI 2009**	**MRDI 2009**	**CRDI 2009**
F	6.843	10.050	27.147	2.546	.954	2.793	5.393	22.317	1.300	.435	2.907	4.782	17.846	3.154	1.374
Sig	.000*	.000*	.000*	.057***	.415	.042**	.001*	.000*	.276	.728	.036**	.003*	.000*	.026**	.252

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10 % level, N for each year = 200, N total = 600

Table 5.14: Five major sub Risk Disclosure Indices (RDI) (2007-2009)

Risk Disclosure Items	Pooled	2007	2008	2009
Total Risk Disclosure Index (RDI)	33.73%	31.46%	34.20%	35.54%
Business Risk	46.55%	44.55%	46.38%	48.73%
Identifying , evaluating and managing risks[A]	91.17%	88.00%	92.50%	93.00%
Future prospects[E]	89.47%	90.00%	88.90%	89.50%
Impact of strategy[E]	80.83%	80.00%	81.50%	81.00%
Effects of disposals[E]	58.17%	57.50%	58.50%	58.50%
Effects of acquisition[E]	56.67%	56.00%	56.00%	58.00%
Impact of strategy on future[E]	48.33%	43.00%	49.00%	53.00%
Safety policy[E]	46.67%	40.50%	48.50%	51.00%
Capital project committed[E]	43.00%	38.50%	39.50%	51.00%
Committed expenditure for capital projects[E]	19.50%	17.00%	18.50%	23.00%
Safety of products[E]	12.67%	12.50%	12.50%	13.00%
Data on accidents[E]	11.83%	11.00%	11.00%	13.50%
Cost of safety measures[E]	0.50%	0.50%	0.50%	0.50%
Strategy Risk	17.21%	13.81%	18.32%	19.50%
External factors and company's prospect[D]	62.17%	45.00%	66.00%	75.50%
Major regional economic development[D]	27.17%	23.50%	29.00%	29.00%
Risks and opportunities due to climate change[B]	20.83%	16.00%	24.50%	22.00%
Risks related to corruption[B]	9.17%	10.50%	7.00%	10.00%
Freedom of association risk[B]	8.00%	6.50%	8.00%	9.50%
Risk-control programs regarding serious diseases[B]	6.17%	5.50%	7.00%	6.00%
Risk for child labour, and elimination of child labour[B]	1.17%	1.00%	1.50%	1.00%
Incidents of forced or compulsory labour[B]	0.67%	0.50%	1.00%	0.50%
Operating Risk	47.37%	45.70%	48.30%	48.10%
GAAP risks of the special purpose entity[C]	79.00%	78.00%	79.50%	79.50%
Impact accounting policy changes[E]	62.17%	62.50%	62.00%	62.00%
Internal control and the extent risk are acceptable[A]	60.33%	57.00%	64.00%	60.00%
Internal control including risk[A]	22.00%	19.50%	23.50%	23.00%
Internal control and risks [A]	13.33%	11.50%	12.50%	16.00%
Market Risk	18.24%	16.24%	19.21%	19.27%
Major exchange rates used in the accounts[E]	88.50%	87.00%	89.00%	89.50%
Effects of inflation on results—qualitative [E]	24.33%	19.00%	26.00%	28.00%
Effects of inflation on future operation—qualitative [E]	8.67%	4.50%	12.00%	9.50%
Effects of inflation on results—quantitative [E]	4.50%	2.50%	5.00%	6.00%
Supplementary inflation adjusted financial statement[D]	2.00%	1.00%	3.00%	2.00%
Effects of inflation on assets—qualitative [E]	0.33%	0.50%	0.00%	0.50%
Effects of inflation on assets—quantitative [E]	0.00%	0.00%	0.00%	0.00%
Credit Risk	45.92%	44.00%	44.75%	49.00%
Provide consumer credit business [C]	78.97%	77.50%	78.50%	80.90%
Extensions of credit[C]	13.00%	10.50%	11.00%	17.50%

Legend: A = Adapted from Turnbull Report (1999), B = Adapted from Global Report Initiative (GRI) (2006), C = Adapted from Sarbanes-OxleyAct of 2002, SEC 401, D = Adapted from the Voluntary Disclosure Instrument (VDIS), Ho (2009), and E = Adapted from Voluntary Disclosure Checklist (VDC), Gray, Meek, and Roberts, (1995).

Overall, Table 5.14 reveals vast disparities of communication across the various risk elements. Table 5.14 shows that the highest and the lowest risk disclosure along the five sub major risk categories are:

- The business risk disclosure item "Identifying, evaluating and managing significant risks**"** is the highest level of communication (91.17%), while "Cost of safety measures" is the lowest reported item (0.50%);

- For the strategy risk category, "Specific external factors affecting company's prospect" is the highest item (62.17%), while "Incidents of forced or compulsory labour" is the lowest item (0.67%);

- For the operating risk category, "GAAP risks of the special purpose entity" is the highest item (79.0%), while "A sound system of internal control, to reduce the incidence and impact of risks that do materialize" is the lowest item (13.33%);

- For the market risk category, "Major exchange rates used in the accounts" is the highest item (88.50%) and "Effects of inflation on assets quantitative'' is the lowest item with absolutely no (0 %) disclosure; and

- For the credit risk category. Index "Provided consumer credit business" is most disclosed (78.97%) and "Extensions of credit"(13.0%) the least disclosed.

5.5 Summary

This chapter presents a discussion of descriptive statistics, Independent t-test, ANOVA and Post hoc Tukey analysis relating to the dependent variable and possible predictor variables. The analysis undertaken provides evidence that there are rising levels of risk disclosure (31.46%-

35.54%) in the annual report of manufacturing listed companies in Australia, Indonesia, Malaysia, and Singapore over the 2007-2009 GFC periods. The risk disclosures do vary across countries. The highest RDI is with Malaysian manufacturing listed companies (37.30%) follow by Singaporean companies (34.06%), then Australian companies (33.24%) with the lowest RDI being Indonesian companies with a mean of 30.20%. There is a consistent steady increase over time all countries manufacturing listed companies' RDI scores differ in each year. Five sub-categories of risk disclosure trends show that operating risk disclosure (45.70-48.10%), business risk (44.55-48.73%) and credit risk (44.00-49.00%) are by far the highest sub-categories of risk disclosed over time, while market risk (16.24-19.27%) and strategy risk (13.81-19.50%) are consistently far lower. There are also high level differences between profit companies and loss companies on risk disclosure levels throughout the GFC period. Profit companies disclose more risk information than loss companies.

The next chapter reports the statistical analysis and the testing of the independent variable predictors hypothesized to be associated with risk disclosure patterns (Chapter 6). Chapter 7 then documents the finding of the additional analysis conducted. Finally, Chapter 8 concludes the thesis with a summary of key findings, limitations and assumptions, implications and suggestions for future research.

CHAPTER 6
MULTIVARIATE STATISTICS

6.1 Introduction

Chapter 6 reports the multivariate testing of hypotheses. The statistical analysis focuses on the independent and control predictor variables hypothesized to be associated with voluntary risk disclosure patterns. The tests involve use of Ordinary Least Square (OLS) regression modeling with the risk disclosure index as the dependent variable in relation to the possible predictor variables.

This thesis examines the relationship between four independent variables (country, company size, managerial ownership, board independence), four control variables (profitability, leverage, auditor, age of business), and the dependent variable (risk disclosure index).

Multivariate testing helps to better understand the different between the associations in three different years: (1) 2007 Global Financial Crisis (GFC) year; (2) 2008 GFC year; and (3) 2009 GFC year.

6.2 Multivariate Regression Models

Multivariate models are constructed to consider the simultaneous effects of the independent and control variables on the RDI as the dependent variable. The multivariate regression model tests the cross-sectional (within each year) associations between RDI and the predictor variables. For each year observation, an estimate of the regression equation is as follows:

$$\boldsymbol{RDI_{jt}} = \beta_0 + \beta_1 \boldsymbol{CTY_{jt}} + \beta_2 \boldsymbol{Sizejt} + \beta_3 \boldsymbol{ManOwn_{jt}} + \beta_4 \boldsymbol{BoardInd_{jt}} + \beta_5 \boldsymbol{Lev_{jt}} + \beta_6 \boldsymbol{Prof_{jt}} + \beta_7 \boldsymbol{Aud_{jt}} + \beta_8 \boldsymbol{AgeBus_{jt}} + \varepsilon_{jt}$$

Where:

Dependent variable:

RDI_{jt} = risk disclosure index for company $_j$ in year $_t$;

Independent variables:

CTY_{jt} = country for company $_j$ in year $_t$;
$Size_{jt}$ = company size for company $_j$ in year $_t$;
$ManOwn_{jt}$ = managerial ownership for company $_j$ in year $_t$;
$BoardInd_{jt}$ = board independent for company $_j$ in year $_t$;

Control variables:

Lev_{jt} = leverage for company $_j$ in year $_t$;
$Prof_{jt}$ = profit for company $_j$ in year $_t$;
Aud_{jt} = auditor for company $_j$ in year $_t$;
Age_{jt} = age of business for company $_j$ in year $_t$;
β_0 = intercept;
$\beta_{1\text{-}8}$ = estimated coefficient for each item;
ε_{jt} = error term

6.3 Correlation Analysis and Model Validity

Before going on to the regression analysis, the validity of the models is assessed. The multicollinearity statistical problem is one of the potential issues in multivariate analysis. Multicollinearity happens when there is a high multiple correlations between the independent variables. A correlation coefficient between independent variables of 0.8 or higher is often the benchmark score for multicollinearity concern (Cooke 1989; Gujarati 1995).

Table 6.1 (Panels A – D) reveal that the highest correlation is less than 0.8 in 2007, 2008, 2009 and pooled data. The highest value in 2007 is 0.389, 2008 is 0.365, 2009 is 0.352 and pooled data is 0.369. Given this 'low' correlation in each year's data, concerns about multicollinearity between independent and control variables are not significant for the 2007, 2008, 2009, and pooled years' data.

Table 6.1: Pearson Correlation RDI Pooled Data

Panel A Pooled	RDI pooled	CTY pooled	Size pooled	ManOwn pooled	BoardInd pooled	Lev pooled	Prof pooled	Aud pooled	AgeBus pooled
RDI pooled	1.000								
CTY pooled	.164*	1.000							
Size pooled	.244*	-.002	1.000						
ManOwn pooled	-.131*	.250*	-.172*	1.000					
BoardInd pooled	.197*	.064*	.247*	-.109*	1.000				
Lev pooled	-.012	-.141*	.146*	-.147*	.120*	1.000			
Prof pooled	.184*	.025	.263*	-.020	.052	-.017	1.000		
Aud pooled	-.220*	-.301*	-.321*	.114*	-.245*	.037	-.153*	1.000	
AgeBus pooled	.106*	-.217*	.318*	-.369*	.117*	.257*	.134*	-.249*	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Table 6.1: Pearson Correlation RDI 2007

Panel B 2007	RDI 2007	CTY 2007	Size 2007	ManOwn 2007	BoardInd 2007	Lev 2007	Prof 2007	Aud 2007	AgeBus 2007
RDI 2007	1.000								
CTY	.200*	1.000							
Size 2007	.232*	.005	1.000						
ManOwn 2007	-.171*	.235*	-.198*	1.000					
BoardInd 2007	.234*	.070	.232*	-.125*	1.000				
Lev 2007	-.013	-.131*	.184*	-.190*	.131*	1.000			
Prof 2007	.180*	.080	.364*	-.002	.064	-.210*	1.000		
Aud 2007	-.278*	-.298*	-.339*	.161*	-.179*	.013	-.200*	1.000	
AgeBus 2007	.153*	-.217*	.328*	-.389*	.141*	.284*	.142*	-.259*	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Table 6.1: Pearson Correlation RDI 2008

Panel C 2008	RDI 2008	CTY 2008	Size 2008	ManOwn 2008	BoardInd 2008	Lev 2008	Prof 2008	Aud 2008	AgeBus 2008
RDI 2008	1.000								
CTY	.175*	1.000							
Size 2008	.280*	.007	1.000						
ManOw 2008	-.135*	.273*	-.154*	1.000					
BoardIn 2008	.240*	.088	.251*	-.051	1.000				
Lev 2008	-.016	-.148*	.137*	-.143*	.102**	1.000			
Prof 2008	.189*	-.003	.224*	-.008	-.007	-.004	1.000		
Aud 2008	-.222*	-.312*	-.294*	.090	-.264*	.032	-.086	1.000	
AgeBus 2008	.094**	-.217*	.308*	-.365*	.059	.279*	.083	-.260*	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Table 6.1: Pearson Correlation RDI 2009

Panel D 2009	RDI 2009	CTY 2009	Size 2009	ManOwn 2009	BoardInd 2009	Lev 2009	Prof 2009	Aud 2009	AgeBus 2009
RDI 2009	1.000								
CTY	.125*	1.000							
Size 2009	.221*	-.019	1.000						
ManOw 2009	-.078	.243*	-.161*	1.000					
BoardIn 2009	.109**	.036	.254*	-.143*	1.000				
Lev 2009	-.005	-.146*	.124*	-.114**	.129*	1.000			
Prof 2009	.226*	.010	.235*	-.068	.137*	.154*	1.000		
Aud 2009	-.169*	-.294*	-.329*	.086	-.293*	.067	-.217*	1.000	
AgeBus 2009	.063	-.217*	.316*	-.352*	.145*	.215*	.214*	-.230*	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Table 6.1 (Panel A-D) also shows the Pearson Product-moment correlation coefficient for the continuous predictor variables including the independent and control variables in each year and aggregate data.

The country incorporation is correlated with RDI in 2007, 2008, 2009 and pooled years. In all years, there is a positive and statistically significant ($p < 0.010$) correlation between country and the extent of voluntary risk disclosure, as measured by RDI. However, the strength of the correlation is below 0.2 for all periods.

Log firm size (Size) is positively and statistically significantly ($p < 0.010$) correlated with RDI in all years. The value of the correlation coefficients between Size and RDI is below 0.3. The directionality of these correlations is consistent with that hypothesized (H2).

There is a negative and statistically significant ($p < 0.010$) correlation between managerial ownership (ManOwn) and RDI in 2007, 2008, and the pooled data yet not statistically significant in 2009. The coefficients are all under 0.2. The directionality of these correlations is consistent with that hypothesized (H3).

Board independence (BoardInd) as a proxy of corporate governance is correlated with RDI with positive and statistically significant ($p < 0.010$) in 2007, 2008 and pooled years and positive and statistically significant ($p < 0.05$) in 2009. The coefficients are all under 0.3. The directionality of these correlations is consistent with that hypothesized (H4).

Table 6.1 (Panels A-D) then reports the correlation coefficient for the control variables. Leverage (Lev) is not correlated with RDI. Correlations between profit (Prof) as a control variable and RDI is positive and statistically significant ($p < 0.010$) in all years under study. The coefficients for profit are all under 0.3. Auditor (Aud) is a negative and statistically significantly ($p < 0.010$) correlated with RDI in all years with the coefficients under 0.3. Age of business (AgeBus) is correlated with RDI

with positive and statistically significant ($p < 0.010$) in 2007 and pooled data; positive and statistically significant ($p < 0.050$) in 2008; yet AgeBus is not significant correlated with RDI in 2009. The AgeBus coefficients are all under 0.2.

Table 6.2 looks at other key statistical issues. It shows that skewness ratio and kurtosis ratio is between -2 and +2, the distribution of data in 2007 is within the normal range (-0.020/0.172 = -0.116 (skewness ratio); 0.114/0.342 = 0.333 (kurtosis ratio)). The distribution of data in 2008 is again in the normal range with the skewness ratio and kurtosis ratio between -2 and +2 (0.067/0.172 = 0.389 (skewness ratio); -0.056/0.342 = -0.163 (kurtosis ratio)). Table 5.5 also reveals that the distribution of data in 2009 is 'normal', skewness ratio and kurtosis ratio is between -2 and +2, (-0.083/0.172 = -0.483 (skewness ratio); 0.293/0.342 = 0.857 (kurtosis ratio). The distribution of data for the entire pooled 600 firm-year data range is normal. The skewness ratio and kurtosis ratio is between -2 and +2 (0.008/0.100 = 0.080 (skewness ratio); 0.134/0.199 = 0.673 (kurtosis ratio).

Table 6.2: Normality Test[26] Regressions: 2007, 2008, 2009 and Pooled Data Sets

	Skewness		Kurtosis	
	Statistic	**Std.Error**	**Statistic**	**Std.Error**
2007 Unstardardized Residual n = 200	-0.020	0.172	0.114	0.342
2008 Unstardardized Residual n = 200	0.067	0.172	-0.056	0.342
2009 Unstardardized Residual n = 200	-0.083	0.172	0.293	0.342
Pooled year Unstardardized Residual n = 600	0.008	0.100	0.134	0.199

[26] Histogram looking at normal curves in Figures 5.1a-d reveals that size is heavily skewed to the left. Consequently, firm size is recomputed as the natural log of total assets.

Overall, the diagnostics exploring the statistical assumptions as illustrated above provide evidence that the models are valid.

6.4 RDI Reliability Check

Independent evaluators, who are two established accounting academics based in the Asian Pacific region, have double checked the data set to better ensure reliability. Such additional testing helps control for subjectivity in the interpretation of the contents of Risk Disclosure Index (RDI). The two independent assessors are both knowledgeable accounting academics with corporate reporting expertise.

The independent evaluators reviewed the annual reports of a sample of 60 firm year annual reports data (representing 10% of the total sample size) and completed the scoring sheet of the index as a reliability check[27]. The unweighted risk disclosure index scores of these independent evaluators are then compared with the researcher's to ascertain if there are any statistically significant differences. A t-test for differences in mean from RDI scores is applied. The results are shown in Table 6.3.

Table 6.3: Reliability Test of RDI Comparison

	Mean	t-test	P (T<=t) two-tail
2007 reports Researcher Evaluators	0.4045 0.4075	-0.256	0.800
2008 reports Researcher Evaluators	0.4425 0.4315	1.466	0.159
2009 reports Researcher Evaluators	0.4520 0.4415	1.677	0.110
All reports Researcher Evaluators	0.4330 0.4265	1.303	0.208

Legend: n=60; Comparing the mean risk disclosure index scores (RDI) of both researcher and evaluators. The differences in scores are not statistically significant. This demonstrates a close agreement in scoring between the researcher and the evaluators.

[27] Krippendorff (1980) considers it desirable that at least two researchers do the analysis independently and compare results, as a reliability check.

Results of the Table 6.3 t-tests indicate that mean voluntary disclosure scores in each year are virtually the same and do not differ significant ($p \geq 0.050$) between the researcher and the independent evaluators. Based on measures undertaken, the subjectivity problem arising from the scoring procedure against the disclosure instrument is deemed inconsequential. The scores for the risk disclosure index are considered reliable.

6.5 Multiple Regression Results: Hypotheses Testing

Table 6.4 below illustrates the predictive power of the four OLS regression models from the 2007, 2008, 2009 data and also the entire pooled data set (2007-2009).

All four models[28] are robust (p-value < 0.010). In other words, the models suggest that there is enough evidence that the combination of country, company size, board independence, leverage, profitability, auditor and age of business significantly influence the level of risk disclosure. The value of the adjusted R-square score in 2007 is 14.1%, in 2008 it is 14.4%, in 2009 it is a lower 6.8% and in the pooled model it is 12.8%. Key explanatory factors highlighted from the four regression models in Table 6.4 are:

- All regressions except the 2009 regression model reveal that the country variable is statistically significant (p-value < 0.050 for 2007 and 2009 regressions and p-value <0.010 for pooled regression). Thus, there is evidence to conclude that country is associated with the extent of risk disclosure. **H1** is accepted.

[28] The problem of repeated measures in the pooled sample is taken into account. The key problem is lack of independence in the full sample. This thesis thus runs the regressions for each individual year to avoid the problem. The hypotheses testing for individual year 2007, 2008, 2009 leads to the same conclusions as that of the pooled sample. Appendix H also shows the multiple regression analysis results using the pooled sample and control for years using dummy (categorical) variables. The results are almost identical with the main regression.

- Size is also statistically significant in three of the four regressions (except 2007) with positive coefficients throughout. Larger companies are communicating a higher level of risk data. Providing support for agency theory tenets, **H2** is accepted.
- Managerial ownership is statistically negatively related to risk disclosures in three of the four regressions (except 2009). Firms with lower levels of managerial ownership disclose more risk information. **H3** is accepted.
- Board independence is statistically positively significant in three of the four regressions (except 2009), leading to acceptance of **H4** (consistent with agency theory tenets). A higher percentage of independent board members seem to positively influence risk disclosures.
- Profitability, as a control variable, is significant in three of the four regressions (except 2007). More profitability firms have higher levels of risk communication.
- The others control variables are not significant predictors of the extent of risk disclosure during the 2007-2009 GFC time period.
- Overall, the full pooled 600[29] firm-year data consistently provides statistical evidence for acceptance of all four hypotheses H1-H4.

[29] This thesis also runs regression analysis after dropping the seven potential outlier using Mahalanobis distance and Cook's distance as diagnostic methods (Velleman and Welsch 1981; Ghozali 2005) (see Appendix F). These extra results are almost identical with the regression before dropping the outliers. Therefore the full 600 strong sample is used in this study.

Table 6.4: RDI Primary Multiple Regression Analysis (2007, 2008, 2009, and Pooled)

		2007			2008			2009			Pooled Data		
Adjusted R^2		.141			.144			.068			.128		
Durbin Watson		1.620			1.601			1.519			1.536		
F statistic		5.068			5.201			2.826			11.995		
Significance		0.000*			0.000*			0.006*			0.000*		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.231	3.934	.000	.186	2.999	.003	.246	3.789	.000	.217	6.045	.000
Country	(+)	.017	2.584	.011**	.017	2.409	.017**	.012	1.607	.110	.016	3.827	.000*
Company Size	(+)	.006	1.137	.257	.013	2.338	.020**	.012	2.157	.032**	.011	3.318	.001*
Managerial Ownership	(-)	-.079	-2.007	.046**	-.091	-2.051	.042**	-.046	-1.041	.299	-.074	-2.983	.003*
Board Independence	(+)	.077	2.260	.025**	.091	2.397	.017**	.014	.373	.710	.063	2.986	.003*
Leverage	(+)	-.019	-.716	.475	-.018	-.739	.461	-.014	-.554	.580	-.015	-1.049	.295
Profitability	(+)	.034	1.075	.284	.048	2.172	.031**	.090	2.535	.012**	.049	3.067	.002*
Auditor	(+)	-.022	-1.359	.176	-.009	-.532	.596	-.006	-.341	.733	-.012	-1.240	.216
Age of Business	(+)	.000	.782	.435	.00003	.094	.925	.000	-.386	.700	.00006	.344	.731

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

6.6 Sensitivity Analysis

Extra sensitivity analysis is conducted to check the robustness of the Table 6.4 main findings in the model presented in Section 6.5. Sensitivity analysis is also applied to determine the extent to which the independent variables used in the main multiple regression analysis are sensitive to different measurements on the same variables. All four key independent variables are re-measured (country, size, managerial ownership and corporate governance).

The country variable is re-measured in several different ways. First, country is initially measured by simple nominal categories as 1 if Indonesian listed manufacturing companies, 2 if Australian, 3 if Malaysian, and 4 if Singaporean in the main regression (see Table 6.4). In the sensitivity analysis, as discussed in Chapter 2, country is re-measured by: a) GDP per capita; b) economic effect of Global Financial Crisis (GFC) categorized 0 if country experiences a smaller impact of GFC and 1 if country experiences a larger negative impact of GFC (the basis for measure economic effect of GFC as can be seen in Figure 2.6); c) categorized 1 if ex British colonial with its common law also applies one-tier board system and categorized 0 if ex Dutch colonial with its civil law approach this exact re-measurement also applies two-tier board system. The extra regression comparisons between the main and sensitivity analysis reveals that:

- Country in the main regression (categorized as nominal categories) is statistically significant in three of the four regressions (except 2009) with positive coefficients (see Table 6.4). The highest RDI is Malaysian manufacturing listed companies follow by Singaporean and Australian companies with the lowest RDI being Indonesian companies (see Table 5.6).
- Country in the sensitivity analysis which is re-measured by GDP per capita is not significant in all four regressions (see Table 6.5). The adjusted R^2 falls compared with the main regressions.

- Country in the sensitivity analysis (categorized as 0 if country smaller impact of GFC (Australia and Indonesia) and 1 if country larger impact of GFC (Malaysia and Singapore)) is statistically significant in three of the four regressions (except 2009) with positive coefficients (see Table 6.6). The adjusted R^2 falls in 2007 and 2008 yet rises in 2009 and is similar in pooled data compare with the main regressions.
- Country in the sensitivity analysis (categorized 1 if ex British colonial with applies common law and one-tier board system (Australia, Malaysia, and Singapore) and categorized 0 if ex Dutch colonial with applies civil law and two-tier board system (Indonesia)) is statistically significant in all of the four regressions but with negative coefficients (see Table 6.7). The adjusted R^2 rises compared with the main regressions.

In summary, different measure of country proxies does seem to make a difference in the hypotheses testing

Second, in the Table 6.4 main regression company size is measured by the companies' total assets in U.S dollars and logged to reduce skewness. Size is then re-calculated in Table 6.5 using a different measurement for sensitivity analysis purposes using log total revenue. The text below summarizes the results comparison between the main and sensitivity analysis measurements for the company size effect on RDI:

- Size in the Table 6.4 main regression measured by log total assets is statistically significant in three of the four regressions (except 2007) with positive coefficients (Table 6.4).
- Size in sensitivity analysis regression is then re-measured by log total revenue. Table 6.8 notes that this size measure is again highly significant this time in all four regressions (2007, 2008, 2009, and pooled) again with positive coefficients (see Table 6.8). The adjusted R^2 rises compared with the main regressions.

In summary, size is statistically significant regardless of measurement technique and consistent with agency theory tenets.

Third, in the main regression managerial ownership is measured by the percentage of managerial ownership (see Table 6.4). In the sensitivity analysis, managerial ownership is re-measured by: a) categorized as 0 if not present managerial ownership and 1 if present; b) categorized 0 if have ≤ 5% managerial ownership and 1 if have > 5% managerial ownership; c) categorized 0 if have ≤ 10% managerial ownership and 1 if > 10% managerial ownership ; d) categorized 0 if have ≤ 15% managerial ownership and 1 if have > 15% managerial ownership; e) categorized 0 if have ≤ 20% managerial ownership and 1 if have > 20% managerial ownership; f) categorized 0 if have ≤ 25% managerial ownership and 1 if have > 25% managerial ownership; g) categorized 0 if have ≤ 50% managerial ownership and 1 if have > 50% managerial ownership. The comparison between main and sensitivity analysis reveals that:

- Managerial ownership in the Table 6.4 main regression measured by the percentage of managerial ownership is statistically significant in three of the four regressions (except 2009) with negative coefficients (Table 6.4).
- Managerial ownership in the sensitivity analysis (categorized 0 if not present managerial ownership and 1 if present) is not significant in all of the four regressions (see Appendix G.1). Managerial ownership in the sensitivity analysis (categorized 0 if have ≤ 5% managerial ownership and 1 if have > 5% managerial ownership) is not significant in all of the four regressions (see Appendix G.2). Managerial ownership in the sensitivity analysis (categorized 0 if have ≤ 10% managerial ownership and 1 if have > 10% managerial ownership) is moderate significant only in pooled data with negative coefficients (see Appendix G.3). Managerial ownership in the sensitivity analysis (categorized 0 if

have ≤ 20% managerial ownership and 1 if have > 20% managerial ownership) is significant only in pooled data with negative coefficients (see Appendix G.4). Managerial ownership in the sensitivity analysis (categorized 0 if have ≤ 25% managerial ownership and 1 if have > 25% managerial ownership) is moderate significant in 2007 and significant in pooled data with negative coefficients (see Appendix G.5). The adjusted R^2 falls in comparison with the main regressions.

- Managerial ownership in the sensitivity analysis (categorized 0 if have ≤ 15% managerial ownership and 1 if have > 15% managerial ownership) is significant in 2007 and pooled data and moderately significant in 2008 with negative coefficients (see Table 6.9). This is very similar to the main regression results in Table 6.4. The adjusted R^2 rise in 2007, fall in 2008 and are similar in 2009 and pooled data does compare with the main regressions.
- Managerial ownership in the sensitivity analysis (categorized 0 if have ≤ 50% managerial ownership and 1 if have > 50% managerial ownership) is significant in 2008 and pooled data and moderately significant in 2007 with negative coefficients (see Table 6.10). This is also similar with the main regression results in Table 6.4. The adjusted R^2 falls compared with the main regressions.

In summary, in the sample companies which differ between those less than or equal to 15% versus those above this 15% cut-off figure managerial ownership most dramatically influences risk disclosure (there is the same strong statistical difference for those ≤ 50% versus those > 50%). However, companies which have managerial ownership that are in other benchmark dichotomous percentage categories (such as ≤ 5% versus > 5% or ≤ 10% versus > 10% or ≤ 20% versus > 20% or ≤ 25% versus > 25% less influences risk disclosure (see Appendices G.2 – G.5 for more details)

Fourth, corporate governance proxies are compared and contrasted with the main analysis that calculates corporate governance as the percentage of board independence whereas the sensitivity analysis recalculates the corporate governance proxy with board meetings. The comparison reveals that:

- Board independence is positively statistically significant in three of the four main Table 6.4 regressions.
- Board meetings, as a re-measured corporate governance proxy in the Table 6.11 sensitivity analysis is positively significant only in the pooled data set (Table 6.11). The adjusted R^2 rises in 2007, 2009, and pooled data and falls in 2008 as compared with the main regressions.

In summary, different measure of corporate governance proxies does seem to make some difference in the hypotheses testing. This may be due to the fact that there is a huge diversity of corporate governance mechanisms that may well influence risk disclosures in various ways.

Table 6.5: Sensitivity Analysis: RDI Multiple Regression Analysis (Country = GDP per Capita)

		2007			2008			2009			Pooled year		
Adjusted R^2		.114			.123			.058			.109		
Durbin Watson		1.573			1.557			1.509			1.508		
F statistic		4.206			4.499			2.525			10.185		
Significance		.000			.000			.012			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.287	5.192	.000	.239	4.116	.000	.282	4.637	.000	.266	7.946	.000
Country (GDP per Capita)	(+)	.0000004	.889	.375	.0000004	1.026	.306	.0000003	.633	.527	.0000003	1.373	.170
Company Size	(+)	.006	1.003	.317	.013	2.285	.023**	.012	2.090	.038**	.011	3.179	.002*
Managerial Ownership	(-)	-.068	-1.680	.095***	-.077	-1.723	.086***	-.038	-.854	.394	-.062	-2.475	.014**
Board Independence	(+)	.084	2.431	.016**	.094	2.435	.016**	.016	.409	.683	.067	3.122	.002*
Leverage	(+)	-.017	-.611	.542	-.018	-.727	.468	-.015	-.592	.554	-.015	-1.040	.299
Profitability	(+)	.043	1.324	.187	.052	2.275	.024**	.100	2.575	.011**	.055	3.303	.001*
Auditor	(+)	-.034	-2.138	.034**	-.021	-1.246	.214	-.013	-.720	.472	-.023	-2.357	.019**
Age of Business	(+)	.00007	.239	.812	.000	-.357	.721	.000	-.705	.481	-.00007	-.402	.688

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Table 6.6: Sensitivity Analysis: RDI Multiple Regression Analysis (Country = Effect GFC)

		2007			2008			2009			Pooled year		
Adjusted R^2		.139			.141			.069			.128		
Durbin Watson		1.635			1.589			1.521			1.538		
F statistic		5.030			5.084			2.837			11.958		
Significance		.000			.000			.005			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.261	4.756	.000	.219	3.795	.000	.267	4.455	.000	.244	7.347	.000
Country (Effect GFC)	(+)	.036	2.534	.012**	.035	2.239	.026**	.026	1.634	.104	.033	3.793	.000*
Company Size	(+)	.007	1.178	.240	.014	2.367	.019**	.012	2.160	.032**	.011	3.356	.001*
Managerial Ownership	(-)	-.066	-1.709	.089***	-.080	-1.824	.070***	-.041	-.936	.351	-.064	-2.639	.009*
Board Independence	(+)	.076	2.212	.028**	.089	2.338	.020**	.012	.322	.748	.061	2.885	.004*
Leverage	(+)	-.023	-.856	.393	-.020	-.838	.403	-.015	-.592	.555	-.018	-1.223	.222
Profitability	(+)	.026	.829	.408	.043	1.929	.055***	.079	2.192	.030**	.042	2.597	.010*
Auditor	(+)	-.026	-1.649	.101	-.014	-.820	.413	-.009	-.519	.604	-.016	-1.644	.101
Age of Business	(+)	.000	.780	.436	.000003	.010	.992	.000	-.376	.707	.00005	.306	.760

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Table 6.7: Sensitivity Analysis: RDI Multiple Regression Analysis (Country = Ex-Colonial, Legal system, Board System)

		2007			2008			2009			Pooled year		
Adjusted R^2		.175			.171			.096			.154		
Durbin Watson		1.639			1.668			1.570			1.584		
F statistic		6.276			6.141			3.632			14.654		
Significance		.000			.000			.001			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.356	6.636	.000	.309	5.433	.000	.333	5.723	.000	.327	10.047	.000
Country (Ex-Colonial, Legal System, Board System)	(+)	-.067	-3.864	.000*	-.066	-3.489	.001*	-.056	-2.903	.004*	-.062	-5.780	.000*
Company Size	(+)	.005	.966	.335	.013	2.326	.021**	.012	2.197	.029**	.011	3.281	.001*
Managerial Ownership	(-)	-.101	-2.563	.011**	-.111	-2.504	.013**	-.063	-1.431	.154	-.092	-3.736	.000*
Board Independence	(+)	.071	2.128	.035**	.086	2.295	.023**	.014	.362	.718	.060	2.871	.004*
Leverage	(+)	-.001	-.019	.985	-.010	-.418	.676	-.009	-.388	.699	-.006	-.425	.671
Profitability	(+)	.059	1.885	.061***	.056	2.568	.011**	.117	3.235	.001*	.064	4.045	.000*
Auditor	(+)	-.017	-1.094	.275	-.005	-.320	.750	.002	.101	.920	-.008	-.787	.431
Age of Business	(+)	.000	.824	.411	.00007	.216	.829	-.00007	-.249	.804	.00009	.533	.594

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Table 6.8: Sensitivity Analysis: RDI Multiple Regression Analysis (Size = LogRevenue)

		2007			2008			2009			Pooled year		
Adjusted R^2		.174			.161			.126			.165		
Durbin Watson		1.700			1.613			1.613			1.579		
F statistic		6.070			5.664			4.508			15.393		
Significance		.000*			.000*			.000*			.000*		
n		194			195			196			585		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.006	.066	.947	.028	.315	.753	-.016	-.163	.870	.011	.214	.830
Country	(+)	.016	2.388	.018*	.015	2.117	.036**	.013	1.801	.073	.015	3.613	.000*
Size (LogRevenue)	(+)	.036	3.728	.000*	.033	3.556	.000*	.041	4.184	.000*	.036	6.717	.000*
Managerial Ownership	(-)	-.056	-1.437	.152	-.065	-1.465	.145	-.015	-.352	.725	-.047	-1.933	.054***
Board Independence	(+)	.075	2.168	.031**	.084	2.165	.032**	.024	.647	.519	.062	2.913	.004*
Leverage	(+)	-.069	-2.216	.028**	-.035	-1.411	.160	-.024	-.966	.335	-.037	-2.531	.012**
Profitability	(+)	-.031	-.762	.447	.028	1.196	.233	.007	.149	.882	.011	.636	.525
Auditor	(+)	-.007	-.452	.652	-.002	-.128	.898	.008	.440	.661	.000	-.018	.986
Age of Business	(+)	.00007	.263	.793	.000	-.325	.745	.000	-.830	.408	-.00009	-.547	.584

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, some revenue data is missing n 2007 = 194, n 2008 = 195, n 2009 = 196, n pooled = 585

Table 6.9: Sensitivity Analysis: RDI Multiple Regression Analysis (Managerial Ownership ≤15% and >15%)

		2007			2008			2009			Pooled year		
Adjusted R^2		.143			.140			.068			.128		
Durbin Watson		1.623			1.603			1.519			1.540		
F statistic		5.157			5.047			2.811			12.021		
Significance		.000			.000			.006			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.233	3.964	.000	.181	2.903	.004	.243	3.754	.000	.216	6.023	.000
Country	(+)	.018	2.682	.008*	.018	2.388	.018**	.012	1.590	.114	.016	3.825	.000*
Company Size	(+)	.007	1.185	.237	.014	2.404	.017**	.013	2.188	.030**	.011	3.389	.001*
Managerial Ownership (≤15% and >15%)	(-)	-.035	-2.151	.033**	-.032	-1.781	.076***	-.018	-.991	.323	-.030	-3.014	.003*
Board Independence	(+)	.072	2.108	.036**	.091	2.371	.019**	.014	.378	.705	.062	2.914	.004*
Leverage	(+)	-.022	-.796	.427	-.017	-.723	.470	-.015	-.601	.549	-.016	-1.115	.265
Profitability	(+)	.034	1.078	.282	.049	2.185	.030**	.091	2.558	.011**	.050	3.121	.002*
Auditor	(+)	-.023	-1.414	.159	-.009	-.520	.604	-.005	-.287	.775	-.012	-1.222	.222
Age of Business	(+)	.000	.712	.477	.00005	.163	.871	.000	-.353	.724	.00006	.326	.745

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Table 6.10: Sensitivity Analysis: RDI Multiple Regression Analysis (Managerial Ownership ≤50% and >50%)

		2007			2008			2009			Pooled year		
Adjusted R^2		.135			.156			.069			.127		
Durbin Watson		1.650			1.618			1.536			1.553		
F statistic		4.877			.5855			2.834			11.880		
Significance		.000			.000			.005			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.228	3.865	.000	.191	3.083	.002	.244	3.773	.000	.215	5.990	.000
Country	(+)	.015	2.337	.020**	.016	2.203	.029**	.011	1.523	.129	.014	3.502	.000*
Company Size	(+)	.006	1.090	.277	.013	2.285	.023**	.013	2.173	.031**	.011	3.301	.001*
Managerial Ownership (≤50% and >50%)	(-)	-.047	-1.656	.099***	-.076	-2.604	.010**	-.030	-1.068	.287	-.047	-2.845	.005*
Board Independence	(+)	.083	2.429	.016**	.095	2.514	.013**	.016	.424	.672	.067	3.177	.002*
Leverage	(+)	-.015	-.569	.570	-.013	-.547	.585	-.011	-.456	.649	-.012	-.818	.414
Profitability	(+)	.036	1.132	.259	.047	2.142	.033**	.090	2.527	.012**	.048	3.050	.002*
Auditor	(+)	-.025	-1.545	.124	-.014	-.810	.419	-.008	-.450	.653	-.015	-1.546	.123
Age of Business	(+)	.000	1.096	.274	.00006	.195	.846	-.00009	-.318	.751	.000	.674	.500

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Table 6.11 Sensitivity Analysis: RDI Multiple Regression Analysis (Board Meetings)

		2007			2008			2009			Pooled year		
Adjusted R^2		.145			.140			.107			.142		
Durbin Watson		1.466			1.562			1.640			1.502		
F statistic		4.851			4.697			3.684			12.268		
Significance		.000*			.000*			.001*			.000*		
n		182			182			181			545		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.222	3.733	.000	.191	2.921	.004	.225	3.500	.001	.212	5.824	.000
Country	(+)	.015	2.035	.043**	.015	1.882	.061***	.007	.889	.375	.012	2.783	.006*
Company Size	(+)	.012	1.987	.048**	.018	3.121	.002*	.014	2.529	.012**	.014	4.394	.000*
Managerial Ownership	(-)	-.094	-2.445	.015*	-.100	-2.253	.026**	-.061	-1.456	.147	-.087	-3.616	.000*
Board Meeting	(+)	.003	1.502	.135	.002	1.009	.315	.002	1.600	.111	.002	2.383	.018**
Leverage	(+)	-.022	-.733	.465	-.022	-.769	.443	-.015	-.545	.586	-.016	-.947	.344
Profitability	(+)	.029	.887	.376	.057	2.331	.021**	.113	3.235	.001*	.059	3.609	.000*
Auditor	(+)	-.022	-1.373	.171	-.010	-.564	.574	.005	.306	.760	-.010	-.992	.322
Age of Business	(+)	.000	.901	.369	.00009	.282	.778	.00003	.119	.905	.000	.860	.390

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, some board meeting data is missing n 2007 = 182, n 2008 = 182, n 2009 = 181, n pooled = 545

6.7 Summary

This chapter provides evidence of the predictors of the extent of voluntary risk disclosure over the turbulent Global Financial Crisis time period. The four main hypotheses are tested. The Table 6.4 main regression model provides evidence for accepting all four hypotheses. H1: There is an association between country of incorporation and risk disclosures in the annual reports in listed manufacturing companies. H2: There is a positive association between company size and the risk disclosures in the annual reports of manufacturing listed companies. H3: There is a negative association between managerial ownership and the risk disclosures in the annual reports of manufacturing listed companies. H4: There is a positive association between higher levels of board independence and the risk disclosures in the annual reports of manufacturing listed companies. Profitability, as a control variable, is statistically significant in three of the four regressions (except 2007). The others control variables are not significant predictors of the extent of risk disclosure during the 2007-2009 GFC time period.

In the sensitivity analysis, the country re-measurement: impact of GFC, colonial history, legal system, and board system make a difference in the regression model. Size is statistically significant regardless of measurement technique and consistent with agency theory tenets. Sample companies which have ≤ 15% and > 15% also ≤ 50% and > 50% managerial ownership are most influence risk disclosure. A different measure of corporate governance proxies does seem to make a difference in the hypotheses testing.

The following chapter reports the finding of the additional analysis conducted (Chapter 7). Further detailed analysis of the element of risk disclosure is provided. Finally, Chapter 8 then concludes the thesis with a summary of key findings, limitations and assumptions, implications and suggestions for future research.

CHAPTER 7
ADDITIONAL ANALYSIS

7.1 Introduction

The previous chapters (Chapters 5 and 6) discuss the pattern of risk disclosure practices and association between the extent of risk disclosure and firm characteristics over the GFC period. This chapter reports the results on additional analysis[30] in this thesis. This chapter is organized as follows:

(a) Section 7.2 provides additional analysis of the independent and control predictor variables hypothesized to be associated with five major sub categories of risk disclosure (business risk, strategy risk, operational risk, market risk, and credit risk). The tests involve further use of the Ordinary Least Square (OLS) regression model with the five categories of risk disclosure index as the dependent variable in relation to the possible predictor variables.

(b) Section 7.3 uses the additional analysis to look at the association in risk disclosures *change* over time to the independent and control variables *change*[31] as the impact of the change between the GFC years 2007-2009, 2007-2008, and 2008-2009.

(c) Section 7.4 then conveys the association of the *change* over time of the predictor variables with the change of the sub-categories of RDI between the GFC years.

(d) Section 7.5 summaries the new insights derived from the Chapter 7 additional analyses.

[30] This thesis also examines sensitivity analysis in the additional analysis presented in Appendix D.

[31] Section 7.3 and 7.4 results are virtually the same if the predictor variables are calculated as the average figure across the years (see Appendix C1 – C8).

7.2 Additional analysis: Five sub categories of RDI

This section provides more analysis of the independent and control predictor variables hypothesized to be associated with the five major sub categories of risk disclosure (business risk, strategy risk, operational risk, market risk, and credit risk).

The new multivariate regression models test the cross-sectional (within each year) associations between the five key sub categories of risk disclosure (business risk, strategy risk, operational risk, market risk, credit risk) and the predictor variables. An estimate of the (varying) regression equation is as follows:

$$SUBRDI_{jt} = \beta_0 + \beta_1 CTY_{jt} + \beta_2 Sizejt + \beta_3 ManOwn_{jt} + \beta_4 BoardInd_{jt} + \beta_5 Lev_{jt} + \beta_6 Prof_{jt} + \beta_7 Audit_{jt} + \beta_8 Age_{jt} + \varepsilon_{jt}$$

Where:

Dependent variable:

$SUBRDI_{jt}$ = business risk, or strategy risk, or operational risk, or market risk, or credit risk disclosure index for company $_j$ in year $_t$;

Independent variables:

CTY_{jt} = country for company $_j$ in year $_t$;
$Size_{jt}$ = company size for company $_j$ in year $_t$;
$ManOwn_{jt}$ = managerial ownership for company $_j$ in year $_t$;
$BoardInd_{jt}$ = board independence for company $_j$ in year $_t$;

Control variables:

Lev_{jt} = leverage for company $_j$ in year $_t$;
$Prof_{jt}$ = profit for company $_j$ in year $_t$;
Aud_{jt} = auditor for company $_j$ in year $_t$;
$AgeBus_{jt}$ = age of business for company $_j$ in year $_t$;
β_0 = intercept;
β_{1-8} = estimated coefficient for each item;
ε_{jt} = error term

20 new regressions are presented to better explain variance in the five risk disclosure key sub categories. There are the 2007-2009 and pooled data regressions for: 1) Business Risk Disclosure (BRDI), 2) Strategy Risk Disclosure (SRDI), 3) Operating Risk Disclosure (ORDI), 4) Market Risk Disclosure (MRDI) and 5) Credit Risk Disclosure (CRDI).

The highest correlation for BRDI, SRDI, ORDI, MRDI, CRDI in 2007, 2008, 2009 and pooled data remains less than 0.8 (see Appendix B.1 - B.20). There is again no perceived problem of multicollinearity between independent and control variables in these models.

Tables 7.1 - 7.6 below illustrate the predictive power of the model from the regression in the 2007, 2008 and 2009 and pooled data for the relationship between the independent (country, company size, managerial ownership, board independence), and control variables (profitability, leverage, auditor, age of business), with each of the five sub-category dependent variable (BRDI, SRDI, ORDI, MRDI, CRDI). Table 7.1 is the summary from Tables 7.2 – 7.6. Key explanatory factors for the risk disclosure categories highlighted from Tables 7.1 - 7.6 are:

- The 'country' variable is statistically significant for 'operating risk' (ORDI) 2007, 2008, 2009, and pooled data, and also significant for 'market risk' (MRDI) in 2008 (Tables 7.1 – 7.6). For 'operating risk' (ORDI), Indonesia companies are statistically lower than the three other countries' companies ORDI, and for 'market risk' (MRDI), in 2007 and 2009, Indonesian companies' MRDI are significantly higher than Australian companies MRDI (see Table 5.13 and Appendix A.9).
- Size is a consistent positive predictor for "business risk' (BRDI) for all years. Bigger firms provide more ''business' risk data. This is also true for 'market' risk in 2007.
- Managerial ownership is negatively significant for 'strategy risk' (SRDI) in 2007, 2008 and pooled data and also statistically significant for 'business risk' (ORDI) in the pooled data set.
- Board independence is positively significant for 'strategy risk' (SRDI) in 2007, 2008 and the pooled sample; and 'market risk' (MRDI) in the pooled data. For the GFC 2009 period only, board independence does not influence any aspect of risk communication.

- As the first control variable, Leverage is negatively significant for 'business risk' (BRDI) and 'operating risk' (ORDI) in the full pooled sample; but positively significant for 'market risk' (MRDI) in the pooled data.
- Profitability is positively significant for 'strategy risk' (SRDI) in 2007, 2008, 2009 and the pooled sample; More profitable firms clearly disclose more information on strategy issues. There is also a positive link for 'market risk' (MRDI) and 'credit risk' (CRDI) in the pooled data set.
- Auditor is negatively significant for 'business risk' (BRDI) in the pooled year data (see Table 7.2). Independent t-test analysis reveals that companies which have a big 4 auditor more highly communicate 'business risk' (BRDI) with a mean of 49.74% compared with companies which have a non big 4 auditor that have only 40.68% of BRDI disclosure (table not shown for brevity).
- Age of business is positively significant for 'market risk' (MRDI) in 2008 and pooled data.

These Tables 7.1 – 7.6 regression results for risk disclosure categories provide some support for the agency theory tenets (H1, H2, H3 and H4 are partially accepted). Table 7.1 highlights the summary points that:

- For 'business' risk (BRDI): H1 (country) and H4 (board independence) are rejected for all years. H2 (size) is accepted for all years. H3 (managerial ownership) is accepted for 2009 and the pooled data.
- For 'strategy' risk (SRDI): H1 (country) and H2 (size) are rejected in all years. H3 (managerial ownership) and H4 (board independence) is accepted in all data sets except for 2009.
- For 'operating' risk (ORDI): H1 (country) is accepted in all data sets
- For 'market' risk (MRDI): HI (country) is accepted only in 2008, and H2 (size) is only accepted in 2007.
- For 'credit' risk (CRDI): H1 (country), H2 (size), H3 (managerial ownership), H4 (board independence) are rejected in all data sets.

- For control variables: leverage is accepted for 'business risk' (BRDI), 'operating risk' (ORDI), 'market risk' (MRDI) in the pooled data; Profitability is accepted for 'strategy risk' (SRDI) in all data sets, 'market risk' (MRDI) in all data sets except 2007, and 'credit risk' (CRDI) in the pooled data; Auditor is only accepted in 'business risk' (BRDI) in the pooled data; Age of business is only accepted in 'market risk ' (MRDI) 2008 and pooled data.

Table 7.1: Sub-RDI Multiple Regression Analysis: Summary

Panel A Sub-RDI Model	CTY	Size	Man Own	Board Ind	Lev	Prof	Aud	Age Bus
2007 (N = 200)								
BRDI	MS	S	X	X	X	X	X	X
SRDI	X	X	HS	S	X	HS	X	X
ORDI	HS	X	X	X	X	X	X	X
MRDI	X	HS	X	X	X	X	X	X
CRDI	X	X	X	X	X	MS	X	X
2008 (N = 200)								
BRDI	X	HS	X	MS	X	X	X	X
SRDI	X	MS	HS	HS	X	HS	X	X
ORDI	HS	X	X	X	X	MS	X	X
MRDI	S	X	X	MS	MS	HS	X	S
CRDI	X	X	X	X	X	X	X	X
2009 (N = 200)								
BRDI	X	HS	S	X	X	X	X	X
SRDI	X	X	X	X	X	S	X	X
ORDI	HS	X	X	X	X	X	X	X
MRDI	X	X	X	MS	X	HS	X	X
CRDI	X	MS	X	X	X	MS	X	X
Pooled (N =600)								
BRDI	X	HS	HS	X	S	X	S	X
SRDI	X	X	HS	HS	X	HS	X	X
ORDI	HS	X	X	X	S	X	X	X
MRDI	X	X	X	HS	HS	HS	X	HS
CRDI	X	MS	X	X	X	S	X	X

Legend: CTY = country; Size = natural log of total assets; ManOwn = managerial ownership; BoardInd = board independence; Lev = leverage; Prof = profitability; Aud = auditor; AgeBus= age of business; BRDI = business risk disclosure index; SRDI = strategic risk disclosure index; ORDI = operating risk disclosure index; MRDI = market risk disclosure index; CRDI = credit risk disclosure index; HS denotes statistically highly significant at 1%; S denotes statistically significant at 5%: MS denotes statistically moderately significant at 10%, and X means not statistical significant.

Table 7.2: Business Risk Disclosure Index (BRDI) Multiple Regression Analysis

		2007			2008			2009			Pooled data		
Adjusted R^2		.111			.115			.090			.119		
Durbin Watson		1.480			1.773			1.599			1.605		
F statistic		4.091			4.223			3.446			11.152		
Significance		.000			.000			.001			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.261	2.465	.015	.277	2.650	.009	.354	3.426	.001	.292	4.877	.000
Country	(+)	.021	1.714	.088***	.003	.286	.775	.011	.917	.360	.012	1.750	.081***
Company Size	(+)	.024	2.371	.019**	.029	2.977	.003*	.029	3.144	.002*	.027	4.947	.000*
Managerial Ownership	(-)	-.088	-1.245	.215	-.121	-1.631	.105	-.149	-2.113	.036**	-.120	-2.906	.004*
Board Independence	(+)	.088	1.425	.156	.124	1.928	.055***	-.044	-.726	.469	.058	1.645	.100
Leverage	(+)	-.067	-1.371	.172	-.049	-1.218	.225	-.047	-1.184	.238	-.052	-2.166	.031**
Profitability	(+)	-.027	-.480	.632	-.006	-.152	.879	.038	.672	.502	-.004	-.150	.881
Auditor	(+)	-.046	-1.589	.114	-.046	-1.538	.126	-.041	-1.405	.162	-.043	-2.566	.011**
Age of Business	(+)	.000	.899	.370	.00002	.033	.974	.000	-.473	.637	.00009	.319	.750

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Table 7.3: Strategy Risk Disclosure Index (SRDI) Multiple Regression Analysis

		2007			2008			2009			Pooled data		
Adjusted R^2		.095			.121			.052			.094		
Durbin Watson		1.708			1.840			1.872			1.745		
F statistic		3.607			4.438			2.375			8.755		
Significance		.001			.000			.018			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.197	2.649	.009	.065	.797	.426	.121	1.434	.153	.117	2.500	.013
Country	(+)	-.009	-1.032	.303	-.003	-.288	.774	-.010	-1.018	.310	-.007	-1.280	.201
Company Size	(+)	-.011	-1.563	.120	.013	1.714	.088***	.009	1.140	.256	.005	1.053	.293
Managerial Ownership	(-)	-.144	-2.891	.004*	-.152	-2.623	.009*	-.046	-.800	.425	-.113	-3.536	.000*
Board Independence	(+)	.086	1.985	.049**	.133	2.673	.008*	.074	1.507	.133	.104	3.781	.000*
Leverage	(+)	.036	1.037	.301	.005	.162	.871	.021	.654	.514	.016	.835	.404
Profitability	(+)	.125	3.138	.002*	.087	2.995	.003*	.105	2.277	.024**	.090	4.332	.000*
Auditor	(+)	.009	.423	.673	-.002	-.105	.916	-.003	-.127	.899	.001	.114	.910
Age of Business	(+)	.00008	.231	.818	.000	-.902	.368	-.00004	-.091	.927	-.00007	-.329	.742

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Table 7.4: Operating Risk Disclosure Index (ORDI) Multiple Regression Analysis

		2007			2008			2009			Pooled data		
Adjusted R^2		.191			.171			.102			.164		
Durbin Watson		1.419			1.288			1.251			1.288		
F statistic		6.862			6.142			3.827			15.657		
Significance		.000			.000			.000			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.400	2.918	.004	.228	1.713	.088	.337	2.276	.024	.320	4.021	.000
Country	(+)	.091	5.888	.000*	.091	5.863	.000*	.066	3.934	.000*	.083	9.048	.000*
Company Size	(+)	-.018	-1.400	.163	.000	.015	.988	.000	.033	.974	-.006	-.843	.400
Managerial Ownership	(-)	-.036	-.391	.696	-.032	-.339	.735	.100	.997	.320	.007	.133	.894
Board Independence	(+)	.102	1.290	.199	.049	.594	.553	.010	.120	.905	.053	1.126	.261
Leverage	(+)	-.082	-1.293	.198	-.072	-1.386	.167	-.074	-1.319	.189	-.068	-2.141	.033**
Profitability	(+)	-.017	-.228	.820	.079	1.661	.098***	.097	1.199	.232	.053	1.508	.132
Auditor	(+)	-.021	-.556	.579	.037	.965	.336	.007	.171	.864	.007	.324	.746
Age of Business	(+)	.00008	.114	.909	.000	-.195	.845	.000	-.719	.473	.000	-.507	.613

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Table 7.5: Market Risk Disclosure Index (MRDI) Multiple Regression Analysis

		2007			2008			2009			Pooled data		
Adjusted R^2		.152			.092			.083			.090		
Durbin Watson		2.354			1.935			1.534			1.783		
F statistic		5.469			3.508			3.260			8.449		
Significance		.000			.001			.002			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.047	.869	.386	.082	1.190	.235	.131	1.865	.064	.091	2.406	.016
Country	(+)	-.007	-1.130	.260	.019	2.312	.022**	.009	1.096	.274	.007	1.584	.114
Company Size	(+)	.014	2.772	.006*	-.005	-.725	.469	-.008	-1.288	.199	.000	.049	.961
Managerial Ownership	(-)	-.015	-.404	.687	-.013	-.266	.790	.011	.241	.810	-.010	-.379	.705
Board Independence	(+)	.030	.947	.345	.078	1.845	.067***	.069	1.692	.092***	.058	2.591	.010*
Leverage	(+)	.038	1.517	.131	.051	1.899	.059***	.038	1.432	.154	.049	3.207	.001*
Profitability	(+)	.047	1.629	.105	.072	2.930	.004*	.141	3.678	.000*	.078	4.662	.000*
Auditor	(+)	-.014	-.922	.358	.015	.760	.448	.030	1.515	.131	.008	.735	.463
Age of Business	(+)	.000	1.255	.211	.001	2.301	.022**	.000	1.278	.203	.001	2.842	.005*

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Table 7.6: Credit Risk Disclosure Index (CRDI) Multiple Regression Analysis

		2007			2008			2009			Pooled data		
Adjusted R^2		.002			-.018			-.003			.008		
Durbin Watson		1.709			1.803			1.685			1.738		
F statistic		1.050			.551			.918			1.570		
Significance		.400[a]			.817			.503			.131		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.404	2.302	.022	.431	2.449	.015	.325	1.739	.084	.369	3.593	.000
Country	(+)	.014	.695	.488	.004	.182	.856	-.013	-.617	.538	.003	.214	.830
Company Size	(+)	.001	.080	.936	.018	1.081	.281	.028	1.698	.091***	.017	1.808	.071***
Managerial Ownership	(-)	-.105	-.893	.373	-.077	-.616	.538	.013	.099	.922	-.060	-.849	.396
Board Independence	(+)	.101	.994	.322	-.117	-1.086	.279	-.071	-.653	.515	-.022	-.367	.714
Leverage	(+)	.045	.558	.577	-.020	-.300	.765	.002	.029	.977	.001	.032	.974
Profitability	(+)	.165	1.748	.082***	.052	.825	.410	.175	1.709	.089***	.099	2.186	.029**
Auditor	(+)	-.028	-.591	.556	-.030	-.606	.545	.021	.398	.691	-.011	-.372	.710
Age of Business	(+)	.000	-.884	.378	.000	-.733	.465	.000	-.843	.400	.000	-1.230	.219

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

7.3 RDI Change between GFC Years[32]

This section provides more analysis using additional multivariate regression model to examine the association between the change in the risk disclosure and the change of predictor variables between the sample years. The equation regression model is as follow:

$$\Delta RDI_{jt\ and\ t-1} = \beta_0 + \beta_1 CTY_{jt\ and\ t-1} + \beta_2 \Delta Size_{jt\ and\ t-1} + \beta_3 \Delta ManOwn_{jt\ and\ t-1} + \beta_4 \Delta BoardInd_{jt\ and\ t-1} + \beta_5 \Delta Lev_{jt\ and\ t-1} + \beta_6 \Delta Prof_{jt\ and\ t-1} + \varepsilon_{jt}$$

Where:

Dependent variable:

$RDI_{jt\ and\ t-1}$ = Change in risk disclosure index for company $_j$ in year $_{t\ and\ t-1}$;

Independent variables:

$\Delta CTY_{jt\ and\ t-1}$ = Country for company $_j$ in year $_{t\ and\ t-1}$;

$\Delta Size_{jt\ and\ t-1}$ = Change in company size for company $_j$ in year $_{t\ and\ t-1}$;

$\Delta ManOwn_{jt\ and\ t-1}$ = Change in managerial ownership for company $_j$ in year $_{t\ and\ t-1}$;

$\Delta BoardInd_{jt\ and\ t-1}$ = Change in board independent for company $_j$ in year $_{t\ and\ t-1}$;

Control variables:

$\Delta Lev_{jt\ and\ t-1}$ = Change in leverage for company $_j$ in year $_{t\ and\ t-1}$;

$\Delta Prof_{jt\ and\ t-1}$ = Change in profit for company $_j$ in year $_{t\ and\ t-1}$;

β_0 = intercept;

β_{1-6} = estimated coefficient for each item;

ε_{jt} = error term

The multiple regression results based on this new model are used to predict the association between the *change* in the Risk Disclosure Index (∆RDI) and the change in the value of the independent (country, company size, managerial ownership and board independence) and control variables (leverage and profitability) between years. Other control variables (auditor and age of business) are excluded in this model because they have only negligible change over time.

Appendix B.21 – B.23 reveal that the highest correlation for ∆RDI change regressions is still less than 0.8. The problem of multicollinearity between independent and control variables is thus deemed minimal in this model (change in 2007-2009; 2007-2008; 2008-2009).

[32] This thesis also examines sensitivity analysis in the additional change regression analysis presented in Appendix E.

The association between ΔRDI and change in managerial ownership between the year 2007-2008 is the only predictor which has a statistically significant finding and a negative coefficient, therefore ΔH3 is accepted (see Tables 7.7 and 7.8). The other independent and control variables are not statistically significant between any of the years (2007-2009; 2007-2008; 2008-2009).

.

Table 7.7: RDI Δ Multiple Regression Analysis

		Δ2007-2009			Δ2007-2008			Δ2008-2009		
Adjusted R^2		-.006			.000			-.012		
Durbin Watson		2.097			2.026			1.892		
F statistic		.807			.991			.608		
Significance		.566[a]			.433[a]			.724[a]		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.059	3.981	.000	.026	1.966	.051	.024	1.808	.072
ΔCountry	(+)	-.007	-1.298	.196	.000	-.146	.884	-.005	-.968	.334
ΔCompany Size	(+)	-.017	-.563	.574	.000	-.005	.996	.006	.136	.892
ΔManagerial Ownership	(-)	-.033	-.526	.600	-.115	-2.142	.033**	.046	.621	.535
ΔBoard Independence	(+)	-.004	-.112	.911	.021	.457	.648	.00007	.002	.999
ΔLeverage	(+)	.038	.845	.399	.031	.601	.549	-.046	-.852	.395
ΔProfitability	(+)	-.033	-1.384	.168	-.014	-.809	.420	-.025	-1.124	.262

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, n = 200

In summary, ΔRDI is not easily predicted perhaps because there is only a relatively small change in RDI over the GFC period. The finding is robust if Δ predictor variables are replaced by an average of end of year measure for the continuous predictor variables (see Appendix C1 – C8)

Table 7.8: RDIΔ Multiple Regression Analysis: Summary

Panel A RDI Model	ΔCTY	ΔSize	ΔMan Own	ΔBoard Ind	ΔLev	ΔProf
RDI Δ2007-2009 (N = 200)	X	X	X	X	X	X
RDI Δ2007-2008 (N = 200)	X	X	S	X	X	X
RDI Δ2008-2009 (N = 200)	X	X	X	X	X	X

Legend: CTY = country; Size = natural log of total assets; ManOwn = managerial ownership; BoardInd = board independence; Lev = leverage; Prof = profitability; Aud = auditor; others control variables (auditor and age of business) are exclude in this model because there is only negligible change. HS denotes statistically highly significant at 1%; S denotes statistically significant at 5%: MS denotes statistically moderately significant at 10%, and X means not statistically significant.

7.4. Additional analysis: Five Sub Categories of Risk Change

This section details the additional analysis using multivariate regression model to test the association between the *change* in the five sub categories of risk disclosure (business risk, strategy risk, operational risk, market risk, and credit risk) and the *change* of predictor variables between years. This model tests if there are changes in five sub-category of risk variables and the predictor variables in the two reporting years are associated. The equation regression for this varying models is as follow:

$$\Delta SubRDI_{jt \text{ and } t-1} = \beta_0 + \beta_1 CTY_{jt \text{ and } t-1} + \beta_2 \Delta Size_{jt \text{ and } t-1} + \beta_3 \Delta ManOwn_{jt \text{ and } t-1} + \beta_4 \Delta BoardInd_{jt \text{ and } t-1} + \beta_5 \Delta Lev_{jt \text{ and } t-1} + \beta_6 \Delta Prof_{jt \text{ and } t-1} + \varepsilon_{jt}$$

Where:

Dependent variable:

$SubRDI_{jt \text{ and } t-1}$ = Change in business risk, strategy risk, operational risk, market risk, and credit risk disclosure index for company j in year $_{t \text{ and } t-1}$;

Independent variables:

$\Delta CTY_{jt\ and\ t-1}$ = Country for company $_j$ in year $_{t\ and\ t-1}$;
$\Delta Size_{jt\ and\ t-1}$ = Change in company size for company $_j$ in year $_{t\ and\ t-1}$;
$\Delta ManOwn_{jt\ and\ t-1}$ = Change in managerial ownership for company $_j$ in year $_{t\ and\ t-1}$;
$\Delta BoardInd_{jt\ and\ t-1}$ = Change in board independent for company $_j$ in year $_{t\ and\ t-1}$;

Control variables:

$\Delta Lev_{jt\ and\ t-1}$ = Change in leverage for company $_j$ in year $_{t\ and\ t-1}$;
$\Delta Prof_{jt\ and\ t-1}$ = Change in profit for company $_j$ in year $_{t\ and\ t-1}$;
β_0 = intercept;
β_{1-6} = estimated coefficient for each item;
ε_{jt} = error term

This section provides analysis for the model of the five sub categories of risk disclosure change. The multivariate analysis using ordinary least square regressions (OLS) is performed to test if there are predictors that influence risk disclosure categories' change over time.

The predictors in this model are the change in the value of the independent (country, company size, managerial ownership and board independence) and control variables (leverage and profitability) between years. Others control variables (auditor and age of business) are excluded in this model because they have only a negligible change over time.

Appendix B.24-B.38 reveal that the highest correlations for BRDI change, SRDI change, ORDI change, MRDI change, CRDI change in 2007, 2008, 2009 and pooled data again are less than 0.8. Thus, there is no problem of multicollinearity between independent and control variables in this model.

Tables 7.9 - 7.14 illustrate the predictive power of the model from the regression in the 2007, 2008 and 2009 and pooled data for risk disclosure categories' change. Table 7.9 summarizes the results from Tables 7.10 – 7.14. Key explanatory factors for risk disclosure categories highlighted from Tables 7.9 - 7.14 are:

- The 'Country' variable is highly significant in the change between 2007-2008 for 'market risk' (MRDI) regression (see Table 7.13).

- Change of Size is not significant in all the regression.
- Managerial ownership change is negatively significant for 'credit risk' (CRDI) in the change between 2007-2008 and negatively significant for 'market risk' (MRDI) in the change between 2007-2008.
- Board independence change is not significant in all the regressions.
- Leverage change is positively significant for 'market risk' (MRDI) in the change between 2007-2009.
- Profitability change is negatively significant for 'operating risk' (ORDI) in the change between 2007-2008 and 'credit risk' (CRDI) in the change between 2008-2009.

Table 7.9: Sub-RDI ∆ Multiple Regression Analysis: Summary

Panel A RDI Model (N = 200)	**∆CTY**	**∆Size**	**∆Man Own**	**∆Board Ind**	**∆Lev**	**∆Prof**
∆2007-2009						
BRDI	X	X	X	X	X	X
SRDI	X	X	X	X	X	X
ORDI	MS	X	X	X	X	MS
MRDI	X	X	X	X	S	X
CRDI	MS	X	X	MS	X	X
∆2007-2008						
BRDI	MS	X	X	X	X	X
SRDI	X	X	MS	X	X	X
ORDI	X	X	X	X	MS	S
MRDI	HS	X	S	X	X	X
CRDI	X	X	S	X	X	X
∆2008-2009						
BRDI	X	X	X	X	X	X
SRDI	X	X	X	X	X	X
ORDI	X	X	X	X	X	X
MRDI	X	X	X	X	X	X
CRDI	X	X	X	X	X	S

Legend: CTY = country; Size = natural log of total assets; ManOwn = managerial ownership; BoardInd = board independence; Lev = leverage; Prof = profitability; others control variables (auditor and age of business) are exclude in this model because there is only negligible change. BRDI = business risk disclosure index; SRDI = strategic risk disclosure index; ORDI = operating risk disclosure index; MRDI = market risk disclosure index; CRDI = credit risk disclosure index; HS denotes statistically highly significant at 1%; S denotes statistically significant at 5%: MS denotes statistically moderately significant at 10%, and X means not statistical significant.

Table 7.10: BRDI ∆ Multiple Regression Analysis

		∆2009-2007			∆2007-2008			∆2008-2009		
Adjusted R^2		-.007			.002			.028		
Durbin Watson		1.975			1.822			2.080		
F statistic		.773			1.070			1.955		
Significance		.592			.382[a]			.074[a]		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.069	3.081	.002	.047	1.941	.054	.012	.642	.522
Country	(+)	-.011	-1.416	.158	-.014	-1.661	.098***	.005	.669	.504
Company Size	(+)	-.002	-.045	.964	.044	.753	.452	-.038	-.434	.665
Managerial Ownership	(-)	-.128	-1.355	.177	-.056	-.603	.548	.115	1.026	.306
Board Independence	(+)	-.024	-.408	.684	.105	1.291	.198	.003	.049	.961
Leverage	(+)	.006	.084	.933	-.024	-.268	.789	-.084	-.948	.344
Profitability	(+)	-.026	-.748	.455	-.025	-.839	.402	-.101	-2.865	.005*

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, n = 200

Table 7.11: SRDI ∆ Multiple Regression Analysis

		∆2009-2007			∆2007-2008			∆2008-2009		
Adjusted R^2		-.009			.006			-.011		
Durbin Watson		2.007			2.198			1.944		
F statistic		.699			1.199			.624		
Significance		.651			.308			.711		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.056	2.619	.010	.029	1.413	.159	.026	1.351	.178
Country	(+)	.001	.144	.885	.008	1.103	.272	-.007	-.968	.334
Company Size	(+)	-.040	-.911	.364	-.043	-.869	.386	-.050	-.566	.572
Managerial Ownership	(-)	-.092	-1.030	.304	-.130	-1.672	.096***	-.025	-.219	.827
Board Independence	(+)	.007	.128	.898	.054	.791	.430	.026	.417	.677
Leverage	(+)	.022	.349	.727	-.065	-.860	.391	-.065	-.723	.471
Profitability	(+)	-.045	-1.340	.182	.022	.882	.379	.039	1.084	.280

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, n = 200

Table 7.12: ORDI ∆ Multiple Regression Analysis

		∆2009-2007			∆2007-2008			∆2008-2009		
Adjusted R^2		.001			.009			-.013		
Durbin Watson		2.069			2.061			1.865		
F statistic		1.033			1.308			.575		
Significance		.405			.256			.750		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.074	2.174	.031	.025	.868	.387	.037	1.314	.191
Country	(+)	-.021	-1.745	.083***	-.004	-.393	.695	-.015	-1.432	.154
Company Size	(+)	.018	.262	.793	.045	.658	.511	.057	.435	.664
Managerial Ownership	(-)	.054	.375	.708	-.080	-.735	.463	.000	.002	.998
Board Independence	(+)	.018	.203	.840	-.049	-.512	.609	-.061	-.667	.505
Leverage	(+)	.032	.321	.749	.198	1.868	.063***	.038	.289	.773
Profitability	(+)	-.091	-1.700	.091***	-.070	-2.009	.046**	-.041	-.790	.431

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, n = 200

Table 7.13: MRDI ∆ Multiple Regression Analysis

		∆2009-2007			∆2007-2008			∆2008-2009		
Adjusted R^2		.019			.041			-.018		
Durbin Watson		1.500			1.991			1.901		
F statistic		1.640			2.428			.401		
Significance		.138			.028			.878		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.014	.647	.518	-.018	-.880	.380	.021	1.036	.302
Country	(+)	.009	1.165	.245	.019	2.646	.009*	-.008	-1.124	.262
Company Size	(+)	-.058	-1.255	.211	-.042	-.849	.397	-.002	-.017	.987
Managerial Ownership	(-)	.094	.991	.323	-.154	-1.978	.049**	.037	.313	.755
Board Independence	(+)	-.058	-.995	.321	-.098	-1.438	.152	-.002	-.033	.974
Leverage	(+)	.152	2.268	.024**	.117	1.543	.125	.019	.205	.838
Profitability	(+)	-.015	-.419	.676	-.004	-.150	.881	.036	.960	.338

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, n = 200

Table 7.14: CRDI ∆ Multiple Regression Analysis

		∆2009-2007			∆2007-2008			∆2008-2009		
Adjusted R^2		.008			.000			-.015		
Durbin Watson		1.956			1.879			1.742		
F statistic		1.257			1.015			.499		
Significance		.279			.417			.808		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.125	2.736	.007	.034	.776	.439	.083	2.157	.032
Country	(+)	-.031	-1.927	.055***	-.012	-.805	.422	-.018	-1.291	.198
Company Size	(+)	-.012	-.131	.896	-.027	-.257	.798	.118	.663	.508
Managerial Ownership	(-)	.096	.500	.618	-.378	-2.276	.024**	.088	.386	.700
Board Independence	(+)	.211	1.776	.077***	.019	.130	.896	.056	.447	.656
Leverage	(+)	.023	.166	.868	.023	.141	.888	-.136	-.753	.452
Profitability	(+)	-.019	-.256	.798	.005	.098	.922	-.023	-.323	.747

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, n = 200

7.5 Summary

Additional regressions are calculated in this chapter to better explain variance in the five risk disclosure key sub categories. There are 2007-2009 and pooled data regressions for: 1) Business Risk Disclosure (BRDI), 2) Credit Risk Disclosure (CRDI), 3) Operating Risk Disclosure (ORDI), 4) Market Risk Disclosure (MRDI) and 5) Strategy Risk Disclosure (SRDI). This chapter also details the additional analysis to look at the association in risk disclosures *change* over time to the independent and control variables *change* and also the association of the *change* over time of the predictor variables with the change of the sub-categories of risk over the turbulent Global Financial Crisis (GFC) time period.

Regression results for risk disclosure categories partially support agency theory tenets (H1, H2, H3 and H4 are partially accepted). Change RDI and the sub-categories of RDI is not easily predicted perhaps because only small changes in RDI occur over GFC period.

The final chapter concludes the thesis with a summary of key findings, implications, contributions, limitations, assumptions, and final remarks.

CHAPTER 8
INSIGHTS ON RISK COMMUNICATION

8.1 Thesis Objective

This thesis provides a longitudinal evaluation of the extent of voluntary risk disclosures in four key South-East Asian countries' (Australia, Indonesia, Malaysia, and Singapore) manufacturing listed companies for the 2007-2009 financial years. This is an important time span to investigate risk disclosures as it encompasses those years most directly impacted by the Global Financial Crisis (GFC). The sole focus on manufacturing listed companies is operationalized using the ORBIS data base which classifies industry via the North American Industry Classification System (NAICS) 2007. The 200 sample firms are stratified randomly selected from manufacturing listed companies' annual reports for fiscal year-ends ranging from 2007 to 2009. The reports include 50 annual reports of manufacturing companies per country, listed in the stock exchanges of Australia, Indonesia, Malaysia, and Singapore. Thus, this doctoral study incorporates a total sample of 600 firm-year annual reports manufacturing listed companies in the four countries. An examination of the manufacturing sector is important as based on the data base from World Bank (2011) the value added to the GDP from this sector in these four countries are high (Australia 29%, Indonesia 47%, Malaysia 55% and Singapore 26%).

Agency theory is used to provide insights into manufacturing listed companies' voluntary risk disclosure practices. The examination of the extent of Risk Disclosure Index (RDI) and its five key sub-categories is based on a comprehensive 34-item disclosure checklist weighting each equally. This thesis relates the extent of voluntary risk disclosures to four key factors: country, company size, managerial ownership and board independence.

This thesis is important as it helps us judge the impact of the GFC and other key factors upon the extent of risk disclosures in this weak economic 2007- 2009 global financial crisis timeframe. Changes were internally generated by the different impact of GFC in the four countries and externally driven through corporate collapses globally caused by the GFC. This final chapter reviews the hypotheses testing and main findings, additional analysis findings, implications, contributions, recommendations and key conclusions.

8.2 Summary of Key Findings

In the agency relationship between managers (agents) and shareholders (principals) there is separation of ownership and control. Principals want agents to act to maximize the principal welfare (Jensen and Meckling 1976). A major issue is the information asymmetry between shareholders and managers in that some information may be given but some may be withheld (Marshall and Weetman 2002). On the other hand, agents are assumed to have incentives to disclose information voluntarily, mainly driven by rational agents' self-interest for example regarding their reputation and remuneration (Healy and Palepu 2001). Disclosure can mitigate the information asymmetry problem (Botosan 1997; Hill and Short 2009).

A better level of risk communication allows capital market participants to be more aware of potential material changes and in doing so, disclosures may well reduce agency costs. Arguably, the disclosure of information about risk will improve stakeholder understanding (Marshall and Weetman 2002; Cabedo and Tirado 2004; Taylor 2008; Hill and Short 2009).

The entire paradigm of accounting has changed with a broadened sense of responsibility to all stakeholders (Mirfazli 2008). Wallage (2000) argues that good sustainability and social responsibility reporting should provide information that is relevant, reliable, neutral, understandable and complete. For instance, such completeness should include the

comprehensive communication of all key risk factors experienced by the company. CSR reporting is an extension of disclosure into non-traditional areas (such as risk) with a greater demand for accountability, ethical actions and being transparent about externalities (Pratten and Mashat 2009). This study examined the communication of risk data which adds important insights into these broader categories.

This thesis aims to identify one important aspect of 'corporate social reporting' that of the communication of all key risk factors experienced by a company. It identifies the level of voluntary risk disclosures (measured and labeled as RDI), as well as the five key sub-components of risks (business, strategy, operating, market, and credit disclosure). The research questions and the key findings are presented in Table 8.1, while Table 8.2 summaries the hypotheses testing.

Table 8.1: Key Research Questions and Findings

Research questions	Findings
1. What is the extent of listed manufacturing companies' risk disclosures in annual reports?	The findings show that overall RDI scores over the economically-challenging GFC time period averages only 33.73% (Section 5.3).
2. To what extent have such listed manufacturing companies' risk disclosures changed over time?	The RDI rises every year ranging from 31.46% in 2007, 34.20% in 2008, and 35.54% in 2009 (Section 5.3).
3. What are the factors explaining the level of risk disclosures?	Multiple regression analysis provides evidence that country impacts on the level of RDI. Size, board independence, and profitability are positively associated and managerial ownership is negatively associated with the extent of voluntary risk disclosure (Section 6.5).

Table 8.2: Summary of Statistical Hypotheses Testing

	Independent Variables	Accepted / Rejected	Pooled	2007	2008	2009
H1	*There is an association between country of incorporation and risk disclosures in the annual reports in listed manufacturing companies*					
	COUNTRY	ACCEPTED	Highly Significant	Significant	Significant	Not Significant
H2	*There is a positive association between company size and the risk disclosures in the annual reports of manufacturing listed companies.*					
	COMPANY SIZE	ACCEPTED	Highly Significant	Not Significant	Significant	Significant
H3	*There is a negative association between managerial ownership and the risk disclosures in the annual reports of manufacturing listed companies*					
	MANAGERIAL OWNERSHIP	ACCEPTED	Highly Significant	Significant	Significant	Not Significant
H4	*There is a positive association between higher levels of board independence and the risk disclosures in the annual reports of manufacturing listed companies*					
	BOARD INDEPENDENCE	ACCEPTED	Highly Significant	Significant	Significant	Not Significant

Highly significant at 1% level, Significant at 5% level, Moderately significant at 10% level findings (see Table 6.4).

In answering research question 3, Hypotheses 1 to 4 are advanced and tested. These hypotheses investigate the association between RDI and predictor variables: country, company size, managerial ownership and board independence. Statistical testing leads to the acceptance of all four hypotheses: H1, H2, H3 and H4 within the agency theory framework.

The multiple regression primary model results (Table 6.4) support a positive association between the Risk Disclosures Index (RDI) and country of incorporation (CTY) for all years of the GFC observation period. The association between risk disclosures and country of incorporation is statistically significant at the 5% levels in years of 2007, 2008 and not statistically significant in 2009. Thus, Hypothesis 1 is supported for the 2007 and 2008 observation periods. The highest RDI is Malaysian manufacturing listed companies (37.30%) follow by Singaporean companies (34.06%), then Australian companies (33.24%) with the lowest RDI being Indonesian companies with a mean 30.20% (see Table 5.6).

The hypotheses testing findings in Table 8.2 are robust given the extra analysis of other country measures which are: 1) categorized as 0 if country smaller impact of GFC (Australia and Indonesia) and 1 if country larger impact of GFC (Malaysia and Singapore); 2) categorized 1 if ex British colonial with applies common law and one-tier board system (Australia, Malaysia, and Singapore) and categorized 0 if ex Dutch colonial with applies civil law and two-tier board system (Indonesia) (see Tables 6.6 and 6.7).

A positive and statistically significant association between risk disclosures and firm size (Size) is found in 2008 and 2009 (Table 6.4). Thus, Hypothesis 2 is supported in 2008 and 2009. Size in the sensitivity analysis regression re-measured by log total revenue is again highly significant this time in all four regressions (2007, 2008, 2009, and pooled) again with positive coefficients (see Table 6.8).

Hypothesis 3 is supported in 2007 and 2008 as there is a negative and statistical significant association (at the 5% level) between risk disclosures and managerial ownership (ManOwn) (Table 6.4). Managerial ownership in the sensitivity analysis (categorized 0 if have ≤ 15% managerial ownership and 1 if have > 15% managerial ownership is very similar to main regression results (see Table 6.9). Managerial ownership in the sensitivity analysis (categorized 0 if have ≤ 50% managerial ownership and 1 if have > 50% managerial ownership) is also similar with main regression Table 6.4 results (see Table 6.10).

There is a positive and statistically significant association (at the 5 % level) between risk disclosure and board independence (BoardInd) in 2007 and 2008 leading to the acceptance of Hypothesis 4 (see Table 6.4). Board meeting as the sensitivity analysis of corporate governance proxy does seem to make a difference in the hypotheses testing.

Further analysis was also conducted using the pooled data[33]. Statistically significant associations (at the 1% level) between RDI and the independent variables are noted for the pooled regression results. These results are consistent with the year-by-year regression results for each individual year (2007, 2008, and 2009). H1, H2, H3, H4 are supported for the pooled regression results. RDI is consistently and positively associated with CTY, Size, and BoardInd. The association between RDI and ManOwn has a negative and statistically significant association (Table 6.4).

8.2.1 Extent of Risk Disclosure Index (RDI) Patterns

There are several possible reasons to explain the relatively low level of RDI scores over the economically-challenging GFC time period (average score is 33.73%) (see Section 5.3). Firstly, company management may feel that communicating risk information in annual reports is not essential for stakeholders in the four sample countries. Secondly, risk data could be considered 'too confidential' for the company to communicate such information to stakeholders. Thirdly, managers may feel there are already sufficient other public outlets for risk information. For instance, risk analysis could be prepared and communicated by individuals with professional risk management knowledge. Independent professional risk analysts have the potential to provide other sources of risk information to the stakeholders through their published or dissemination review on companies' performance. Thus, companies may become less interested in disclosing risk information in their annual reports. This argument is consistent with the agency theory viewpoint suggested by Fama and Jensen (1983, P. 304) that "the decision of managers who initiate and implement important decisions are not the major residual claimants and, therefore, do not bear a major share of the wealth effects of their decisions. Without effective control procedures, such decision managers are more likely to take actions that deviate from the interests of residual claimants".

[33] The limitation of analyzing pooled data is because of the repeated measure problem.

Probohudono et al. (2012b) argues that the relatively low level of risk disclosure by companies over the entire GFC crisis period may led to more uncertainty regarding social responsibility and long term sustainability development.

The slowly rising level of RDI in every year ranging from 31.46% in 2007, 34.20% in 2008, and 35.54% in 2009 (see Section 5.3) may be explained via several possible reasons. Firstly, firm management may feel that risk information is increasingly needed in the crisis years to reduces estimation of risk to better avoid market failure and encourage market liquidity leading to more efficient capital markets (Healy and Palepu 2001).

Secondly, higher levels of risk communication over time could be caused by the natural increase in complexity of, regulations, operations and business strategies which then makes it harder for investors to clearly understand financial information without good explanations of risk factors (Beretta and Bozzoland 2004). Given this scenario, annual report preparers may chose to communicate additional risk information every year.

Thirdly, the increase in risk disclosure in the later years suggests companies' efforts to release information is an effective way to communicate and increase investors' confidence during this globally weak economic time period. The new accounting 'social responsibility' era places more demand for comprehensive reporting and greater disclosure including risk information. This may have made company management more aware of their responsibilities to provide adequate risk information to stakeholders.

Overall, the thesis findings reveal that managements' decision in four countries in the GFC period is to communicate risk information at a generally low level in the annual reports but also reveal that risk communication slowly rises over the GFC crisis years. This may be due to the companies' willingness to provide better risk information to enhance

stakeholders' need for more comprehensive risk disclosure in the annual report.

The overall RDI scores reveal vast disparities of communication across the various individual risk elements. Table 5.9 shows that the highest and the lowest risk disclosure are: 1) "Identifying, evaluating and managing significant risks**"** has the highest level of communication (91.17%), while 2) "Effects of inflation on assets quantitative'' is the lowest item with no disclosure (0 %) by any company for any of the three sample years. One possible reason for the highest disclosed item (91.17%) is that it well conveys a summary of the risks faced by the company. Whereas the lowest disclosed item (0 % for all years) may be too specific and may be deemed to portray a negative company image to the stakeholders.

Table 5.9 notes the following individual items with rising communication across the three GFC years:

- Identifying, evaluating and managing risks; Major exchange rates used in the accounts; GAAP risks of the special purpose entity; Provide consumer credit business; Specific external factors affecting company's prospect; Effects of disposals; Effects of acquisition; Impact of strategy on future; Safety policy; Capital project committed; Major regional economic development; Effects of inflation on results—qualitative; Committed expenditure for capital projects; Internal control and impact of risks that do materialize; Extensions of credit; Safety of products; Data on accidents; Freedom of association risk; Freedom of association risk; Effects of inflation on results—quantitative.

One possible reason for the rises of disclosure for these items is that they may be more directly perceived to benefit stakeholders. Companies may want to show stakeholders that they are concerned about the impact of the GFC and use increased communication to enhance their reputation.

Table 5.9 then reveals that certain other items have falling levels of disclosure across the 2007-2009 sample period:

- These include data about the impact of accounting policy changes; internal control and the extant risks are acceptable.

One probable reason for the decreasing disclosure level in these items is that company management may worry about the cost of disclosing this information.

8.2.2 Discussion on Five Key of sub Risk Disclosure Index (RDI) Patterns

Five key sub-categories of RDI are analysed in this thesis. There are 'business risk' (BRDI), 'strategy risk' (SRDI), 'operating risk' (ORDI), 'market risk' (MRDI), and 'credit risk' (CRDI).

The thesis findings highlight that business, credit, market, and strategy risk disclosure rise over the three GFC years. However, operating risk disclosures show a different trend by increasing in the 2008 period but then falling slightly in 2009 (see Section 5.4.1).

For operating risk, the highest disclosure levels occur in 2008. Yet for the other four risk categories, the highest level of communication is in 2009. This implies that most companies increase their risk disclosure in the later years of the crisis in 2008 and 2009 possibly to reduce estimation risk to better avoid market failure and increase market liquidity. Such an approach could lead to more efficient capital markets (Healy and Palepu 2001).

Overall, operating risk disclosure is the highest sub-category of risk over time, while strategy risk is consistently far lower. Operating risk disclosure (45.70-48.10%), business risk (44.55-48.73%) and credit risk (44.00-49.00%) are by far the highest sub-categories of risk disclosed over time, while market risk (16.24-19.27%) and strategy risk (13.81-19.50%) are consistently far lower (see Section 5.4.1).

It is surmised that the reason that operating, business and credit risk are more communicated is because these issues are seen to be critically vital to the organization's success and are thus highlighted more during the economic crisis period. Whereas, the lower level of communication on the market and strategy risks may be a result of a perception that these items are more 'competitor-sensitive' and thus extra communication of these issues may be more contingent on senior manager's worries about the depth of the crisis and concern about maintaining market share. As these economic concerns begin to ease in 2009, the level of transparency perhaps approaches (more comfortably) the manager's equilibrium range (Probohudono et al. 2012a).

8.3 Association of Risk Disclosure with Predictor Variables

This section provides some explanations of the association between RDI with all the predictor variables under investigation. Univariate test (t-tests, ANOVA and Post hoc Tukey) are discussed as well as correlation analyses and Ordinary Least Square (OLS) multiple regression. In aggregate these statistical techniques are used to test the four hypotheses.

As discussed below, the multiple regression results shows that country, size, managerial ownership and board independence variables are statistically significantly and their associations help explain the extent of risk disclosures.

8.3.1 Country

Country[34] is statistically significant (p-value < 0.050) in three of the four regressions (except 2009) based on the OLS regression result (refer Table 6.4). Thus, there is evidence to conclude that country is associated with the extent of risk disclosure. **H1** is accepted.

This thesis result is consistent with Marshall and Weetman (2002) which suggest that risk disclosure regulations drawn up at same times and with the same driving forces, may have a different impact in different regulatory environments. One plausible explanation is that the different response is based on varying levels of economic development and thus there is varying acceptance of risk information by stakeholders in each country (Marshall and Weetman 2002).

The highest Risk Disclosure Index (RDI) occurs in Malaysian manufacturing listed companies (37.30%) followed by Singaporean companies (34.06%), then Australian companies (33.24%) with the lowest RDI being Indonesian companies with mean 30.20% (see Table 5.6).

Other ways of looking at country differences discussed in this thesis are colonial inheritance, legal system, board system, and lastly stage of economic development. These may be key factors in the relationship between country and disclosure practice (see Chapter Two).

[34] Country in the main regression (categorized as nominal categories) is statistically significant in three of the four regressions (except 2009) with positive coefficients (see Table 6.4). Country in the sensitivity analysis is re-measured in three different ways: country re-measured by GDP per capita is not significant in all four regressions (see Table 6.5).Country in the sensitivity analysis (categorized as 0 if country has a smaller impact of GFC (Australia and Indonesia) and 1 if country has a larger impact of GFC (Malaysia and Singapore)) is statistically significant in three of the four regressions (except 2009) with positive coefficients (see Table 6.6). Country in the sensitivity analysis (categorized 1 if it is a ex British colonial (which applies common law) and a one-tier board system (Australia, Malaysia, and Singapore) and categorized 0 if the country is a ex Dutch colonial jurisdiction which applies civil law and two-tier board system (Indonesia)) is statistically significant in all of the four regressions but with negative coefficients (see Table 6.7).

Australia, Malaysia and Singapore are countries using the British system of law with their history of colonialisation. In contrast, Indonesia is a former Dutch colony. Australia, Malaysia and Singapore are common law countries, while Indonesia is a civil law country. Australia, Malaysia, and Singapore have a one-tier board of director system, while Indonesia has a two-tier system. Australia and Singapore are more economically developed while Malaysia and Indonesia are emerging economies.

Extra sensitivity analysis in Section 6.6 country was re-measured by: a) GDP per capita; b) economic effect of Global Financial Crisis (GFC) categorized 0 if country experiences a smaller impact of the GFC (Australia and Indonesia) and 1 if country experiences a larger negative impact of the GFC (Malaysia and Singapore); c) categorized 1 if ex British colonial with its common law and have a one-tier board system (Australia, Malaysia, Singapore) and categorized 0 if ex Dutch colonial with its civil law approach and have a two-tier board system (Indonesia). The sensitivity analysis results show that in the country re-measurement: impact of GFC, colonial history, legal system, and board system do make a difference in the regression model. These results support Ball et al (2000). which suggest that information asymmetry in common law countries is better resolved by timely public disclosure and financial statements than in civil law countries and this finding is consistent with the Jaggi and Low (2000) conclusion that financial disclosures by companies from common laws countries are significantly higher compared to companies from civil law countries.

Another factor that can explain variances across countries relates to the different overall risk factors in each country. Several international organizations provide overview risk reports and ratings (see Section 2.5). For example, country risk rating analyst by the Economist Intelligence Unit (EIU) (EIU 2012a) reveals that overall Australia and Singapore have lower risk levels than Malaysia and Indonesia.

8.3.2 Company Size

Size[35] is statistically significant in three of the four regressions (except 2007) with positive coefficients (Table 6.4). Larger companies are communicating a higher level of risk data. This clearly provides support for agency theory tenets, **H2** is accepted.

The association between size and the extent of disclosure has been well documented in previous studies (Kanto and Schadewitz 1997; Atan and Maruhun 2009; Linsley and Shrives 2009). This is usually attributed to bigger companies having stronger financial resources with more complex operations to gather more information including risk disclosure. Consequently, company size is an important motivating factor of voluntary risk disclosure. Moreover, from an agency theory perspective, larger companies communicate more due to their higher political visibility.

Disclosure can reduce monitoring cost as part of agency cost by minimizing the capacity of managers' ability to adjust disclosure data (Marshall and Weetman 2002). Therefore, large manufacturing firms that have more complex operations will better ensure monitoring activities to reduce asymmetry of information.

[35] In the main statistical test, company size is measured by the companies' total asset in U.S dollar and logged to reduce skewness. This proxy is recalculated by using a different measurement for sensitivity analysis by analyzing log total revenue. A comparison between main and sensitivity analysis measurements for the company size shows that the effect on RDI is very similar. Size in main regression measured by log total asset is statistically significant in three of the four regressions (except 2007) with positive coefficients (Table 6.4). Whereas, size in the sensitivity analysis regression measured by log total revenue is highly significant in all four regressions (2007, 2008, 2009, and pooled) with positive coefficients (see Table 6.8).

8.3.3 Managerial Ownership

Managerial ownership[36] is negatively related to risk disclosures in three of the four regressions (except 2009). Firms with lower levels of managerial ownership disclose more risk information. Therefore, **H3** is accepted.

This is consistent with the results of the majority of past studies which note a negative relationship between managerial ownership and the level of disclosure (Gelb 2000; Eng and Mak 2003). Lower managerial ownership is associated with increased voluntary disclosure.

Managerial ownership in sample companies falls throughout the early to mid GFC period from 2007 to 2008 (Table 5.1) and seems to also influence the level of risk disclosure (Table 6.4). Companies with lower levels of managerial ownership are more likely to communicate voluntary risk disclosure. Eng and Mak (2003) state that lower levels of managerial ownership will need higher levels of monitoring in the scenario that is associated with increased companies' voluntary disclosure. Gelb (2000) examines the effect of managerial ownership on firms' disclosures and finds firms with lower levels of managerial ownership are more likely communicators of risk disclosures than firms with higher levels of managerial ownership. That is, based on agency theory, managers have greater incentives to consume perks and reduced incentives to maximize job performance. Managers with more influence may seek to downplay

[36] Managerial ownership in the main regression measured by the percentage of managerial ownership is statistically significant in three of the four regressions (except 2009) with negative coefficients (Table 6.4). In the sensitivity analysis, managerial ownership is re-measured by: categorized as present or have > 5% or >10% or > 15% or > 20% or > 25% or > 50% managerial ownership. Managerial ownership in the sensitivity analysis (categorized 0 if have ≤ 15% managerial ownership and 1 if have > 15% managerial ownership) is significant in 2007 and pooled data and moderate significant in 2008 with negative coefficients (see Table 6.9). This is very similar to the main regression in Table 6.4 results. Managerial ownership in the sensitivity analysis (categorized 0 if have ≤ 50% managerial ownership and 1 if have > 50% managerial ownership) is significant in 2008 and pooled data and moderate significant in 2007 with negative coefficients (see Table 6.10). This is also similar with the Table 6.4 main regression results.

social responsibility issues. Thus, lower managerial ownership is associated with increased voluntary disclosure.

8.3.4 Board Independence

Board independence[37] is positively significant in three of the four regressions (except 2009), leading to acceptance of **H4** (consistent with agency theory tenets). A higher percentage of independent board members seem to positively influence risk disclosures (refer Table 6.4).

Prior studies document a significant effect of board independence on disclosure practices (Chen and Jaggi 2000; Cheng and Courtenay 2006; Baek et al. 2009). The results of most past agency theory studies establish a positive relationship between board independence and the level of disclosure. This is consistent with the thesis result.

The evidence from this thesis is that firms with better corporate governance systems communicate more risk information. Greater presence of independent directors within the company positively affects the risk disclosure levels. Arguably, independent directors have less personal interest which allows them to feel more free to inform the shareholders about risk information. In addition, independent directors have incentives to use their decision controls to preserve reputational capital. The main function of the board is to supply governance protection to the shareholders. Shareholders and broader stakeholder classes, as beneficiaries of risk, need representation on the board that is independent of management to protect their assets (Cheng and Courtenay 2006).

[37] Alternate corporate governance proxies were also examined. The main analysis calculates the percentage of board independence compared to the sensitivity analysis which calculates the number of the board meetings. The comparison between the results of main and sensitivity analysis reveal that the regression result is quite different. Board independence is positively significant in three of the four regressions (Table 6.4). Board meetings proxy however is positively significant only in pooled year (Table 6.11).

8.3.5 Control Variables

In order to ascertain the effect of other variables in determining the extent of RDI, several control variables are examined in this thesis. Leverage is derived as total liabilities divided by total assets, profitability is measured by net profit divided by total assets, Auditor is classified as Big4 and non Big4 audit firm and age of business is calculated as the number of years from inception.

OLS regression results indicate that profitability, as a control variable is positively significant in three of the four regressions (except 2007). More profitability firms have higher levels of risk communication (refer Table 6.4). This may be because they want to show that they communicate more comprehensively and are more transparent to attract potential investors in order to gain additional capital.

The others control variables are not statistically significant predictors of the extent of risk disclosure during the 2007-2009 GFC time period.

8.4 Additional analysis

This study also predicts the association between the change in the overall Risk Disclosure Index (RDI) and the change in the value of the independent (country, company size, managerial ownership and board independence) and control variables[38] (leverage and profitability) between years. The association between the change in RDI and change in managerial ownership between the year 2007-2008 is the only predictor which is statistically significant with a negative coefficient (see Table 7.7). The others independent and control variables changes are not statistically significant between any of the years (2007-2009; 2007-2008; 2008-2009). This implies that in general there is no significant change for companies in the three GFC years except the managerial ownership change in 2007-

[38] Auditor and age of business are excluded from these models as they effectively did not change over the sample period.

2008. Despite the importance for companies to disclose risk information, RDI only rose slightly over time in the three GFC years perhaps as concerns about the future increases a company's willingness to provide better risk information.

This thesis also conducted several additional analyses. 20 new regressions were presented to better explain variance in the five risk disclosure key sub categories (business, strategy, operating, market and credit risk). OLS regression results for risk disclosure categories somewhat support agency theory tenets (H1, H2, H3 and H4 are partially accepted). (see Section 7.2). Additional analysis was also conducted regarding the change of the value of the predictor variables[39] to the change of five key sub-categories of RDI. The result implies that there is significant change for companies' managerial ownership change in 2007-2008 which is associated with 'credit risk' (CRDI) and 'market risk' (MRDI) change in 2007-2008. The change in companies' leverage between 2007-2009 is positively associated with 'market risk' (MRDI) change in 2007-2009. The change in profitability in 2007-2008 is negatively associated with 'operating risk' (ORDI) in the change between 2007-2008. Yet for these additional analysis models, leverage and profitability change have unexpected correlation directions and differ from the RDI model (main analysis model) direction.

8.5 Implications

The findings from this thesis have several important theoretical and practical implications. The findings are largely consistent with agency theory. For example, board independence as a proxy of corporate governance mechanism is positively significant to predict the extent of risk disclosure. Corporate governance is a set of control and monitoring systems to mitigate agents from exploiting company information to gain a comparative advantage over principals (Jensen and Meckling 1976).

[39] Auditor and age of business are again excluded in this model because there is only negligible change.

Corporate governance can reduce agency problems such as information asymmetry and agency costs. Disclosures can reduce agency costs by minimizing the capacity of managers to adjust disclosure data (Marshall and Weetman 2002). Disclosures can also reduce estimation risk to better avoid market failure and increase market liquidity leading to more efficient capital markets (Healy and Palepu 2001). However, agency problems can arise when there are a large force of managerial shareholders as they can disadvantage outsider shareholders. This thesis reveals that managerial ownership is negatively significantly related with the extent of risk disclosure suggesting that managerial ownership provides a monitoring mechanism for a company's risk disclosure policy. This finding is consistent with the mainstream agency theory literature.

Overall, this study finds that there are varying levels of risk disclosure over time, across countries and these are influenced by key firm characteristics as well as country of listing. These findings are useful for self-evaluation and benchmarking of risk communication by other corporations across the global landscape. This thesis specific focus is on manufacturing companies. Manufacturing companies are seen as implementing integrated processes that convert materials into goods (see Drucker 1990). Manufacturing companies have longer processes, more complex activities, and may well have more business risks in these activities over most other firms. Arguably, a sole focus on manufacturing firms does better test the agency theory ability to predict disclosures.

Communication laggards are potentially at a disadvantage if they are not more transparent about their risk status to their stakeholders from the perspective of both social reporting and future economic evaluations. For stakeholders, the inclusion of extensive risk disclosures in the annual reports is useful for decision making. Stakeholders may reward companies that include greater communication of potential firm risks. Higher risk disclosure can also lead to a better understanding of a company's social responsibility stance.

8.6 Thesis Contributions and Suggestions for Future Research

This thesis is very important as it contributes to the literature in a number of ways. Firstly, it provides insights into risk disclosure practices. It helps stakeholders (including domestic and foreign investors) to better assess the risk profile for Australia, Indonesia, Malaysia and Singapore manufacturing listed companies. Secondly, by examining the impact of country, company size, managerial ownership and board independence on a literature-based Risk Disclosure Index (RDI) within annual reports for the year 2007, 2008, and 2009, these thesis findings assist stakeholders in obtaining a better understanding of the possible influences upon risk communication. Thirdly, it contributes to the accounting literature by testing agency theory's ability to explain risk disclosure. Fourthly, there is a lack of risk disclosure studies in manufacturing companies especially in these four countries. Fifthly, this study is one of the first to examine the impact of financial crisis 2007-2009 on disclosure via a longitudinal data set. Lastly, research on disclosure risk using sample countries different economic scenarios is rarely done.

A limitation of this study is that the sample is solely based on manufacturing companies in key South-East Asian countries. However, for the purposes of generalization, the findings should and could be tested in other countries and across other industry sectors. Future research is recommended to expand the number and types of countries studied and expand the longitudinal analysis as countries recover from the Global Financial Crisis and move on to other economic paradigms. Lastly, qualitative research techniques could be employed to further examine how risk disclosures enhance our understanding of economic and social reporting.

Overall, the study findings are useful for self-evaluation and benchmarking of risk communication by researchers, regulators, stakeholders and other corporations across countries.

8.7 Final Remarks

This thesis sheds light on the voluntary risk reporting practices in four key South-East Asian countries (Australia, Indonesia, Malaysia, and Singapore,) manufacturing listed companies. This study's selected time span using the 2007-2009 financial years is important due to the impact of the Global Financial Crisis (GFC) to better understand the extent of risk disclosure communication over an economically challenging economic timeframe. Despite the importance for companies to disclose risk information, the findings reveal that four countries manufacturing listed companies mostly communicate relative low levels of risk (31.46% in 2007, 34.20% in 2008, and 35.54% in 2009); however risk communication does slowly rise over the three GFC years perhaps as a future portent concerning company's willingness to provide better risk information. This longitudinal and cross countries examination of the extent of voluntary risk disclosure enhances our understanding and knowledge of the key South-East Asian countries' manufacturing listed companies voluntary risk disclosure pattern.

Mirfazli (2008) offers a very important categorization of the depth of disclosure that could be provided by companies to their stakeholders. The three categories are 'adequate', 'fair' and 'full'. Adequate disclosures cover the bare minimum, fair disclosure includes ethical targets whereas full disclosure represents communication of all relevant information (including a wide swath of social responsibility issues). Dissemination of risk information in its idealized form well fits into this comprehensive third category. However, the actual level of risk communication does not obtain this high benchmark criteria, greater risk communication is thus advocated to increase stakeholder understanding of all aspects of company's activities: economic, social and environmental.

Overall, this thesis finds that there are varying levels of risk disclosure over time, across countries and these are influenced by key firm characteristics and economic drivers. Future research is recommended to increase the

number of countries studied, further examine how risk disclosure enhance our understanding of social reporting and expand the longitudinal analysis as countries recover from the Global Financial Crisis.

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APPENDIX A: Post hoc Turkey Analysis

Appendix A.1 provides evidence for the Post hoc Tukey analysis in the continuous independent variables and control variables by country.

Appendix A.1 Post Hoc Tukey P value IV+CV: By Country

Country	Country	FSize	ManOwn	BoardInd	AgeBus	Lev	Prof
Indonesia	Australia	.019**	.000*	1.000	.000*	.000*	.000*
	Malaysia	.997	.000*	.121	.000*	.001*	.986
	Singapore	.488	.000*	.781	.000*	.000*	.592
Australia	Indonesia	.019**	.000*	1.000	.000*	.000*	.000*
	Malaysia	.010**	.399	.149	.799	.632	.000*
	Singapore	.441	.950	.830	.578	.742	.000*
Malaysia	Indonesia	.997	.000*	.121	.000*	.001*	.986
	Australia	.010**	.399	.149	.799	.632	.000*
	Singapore	.367	.153	.584	.983	.998	.799
Singapore	Indonesia	.488	.000*	.781	.000*	.000*	.592
	Australia	.441	.950	.830	.578	.742	.000*
	Malaysia	.367	.153	.584	.983	.998	.799

IV = Independent Variable, CV = Control variable, *highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix A.2 presents the Post hoc Tukey analysis in the continuous independent variables and control variables by year.

Appendix A.2 Post Hoc Tukey P value IV+CV: By Year

Year	Year	FSize	ManOwn	BoardInd	AgeBus	Lev	Prof
2007	2008	.730	.724	.742	.931	.745	.217
	2009	.525	.756	.486	.752	.962	.714
2008	2007	.730	.724	.742	.931	.745	.217
	2009	.943	.998	.911	.931	.580	.646
2009	2007	.525	.756	.486	.752	.962	.714
	2008	.943	.998	.911	.931	.580	.646

IV = Independent Variable, CV = Control variable, *highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix A.3 shows evidence for the Post hoc Tukey analysis in the continuous independent variables and control variables by country and year.

Appendix A.3 Tukey RDI: By Country and Year

Country	Country	FSize 2007	Man Own 2007	Board Ind 2007	Age Bus 2007	Lev 2007	Prof 2007	FSize 2008	Man Own 2008	Board Ind 2008	Age Bus 2008	Lev 2008	Prof 2008	FSize 2009	Man Own 2009	Board Ind 2009	Age Bus 2009	Lev 2009	Prof 2009
Indonesia	Australia	.482	.000*	1.000	.080***	.005*	.022**	.099***	.000*	.863	.080***	.030**	.065***	.583	.005*	.924	.080***	.029**	.000*
	Malaysia	.999	.048**	.489	.020**	.035**	.993	1.000	.004*	.320	.020**	.118	.999	.991	.020**	.894	.020**	.222	.899
	Singapore	.743	.000*	.939	.011**	.127	.986	.753	.000*	.754	.011**	.078***	.794	.960	.001*	1.000	.011**	.065***	.317
Australia	Indonesia	.482	.000*	1.000	.080***	.005*	.022**	.099***	.000*	.863	.080***	.030**	.065***	.583	.005*	.924	.080***	.029**	.000*
	Malaysia	.394	.369	.514	.954	.923	.046**	.122	.926	.788	.954	.946	.045**	.400	.973	.543	.954	.820	.000*
	Singapore	.975	1.000	.950	.884	.656	.008*	.552	.976	.997	.884	.983	.398	.866	.950	.894	.884	.990	.000*
Malaysia	Indonesia	.999	.048**	.489	.020**	.035**	.993	1.000	.004*	.320	.020**	.118	.999	.991	.020**	.894	.020**	.222	.899
	Australia	.394	.369	.514	.954	.923	.046**	.122	.926	.788	.954	.946	.045**	.400	.973	.543	.954	.820	.000*
	Singapore	.654	.375	.834	.997	.953	.929	.804	.729	.889	.997	.998	.713	.858	.768	.924	.997	.942	.736
Singapore	Indonesia	.743	.000*	.939	.011**	.127	.986	.753	.000*	.754	.011**	.078***	.794	.960	.001*	1.000	.011**	.065***	.317
	Australia	.975	1.000	.950	.884	.656	.008*	.552	.976	.997	.884	.983	.398	.866	.950	.894	.884	.990	.000*
	Malaysia	.654	.375	.834	.997	.953	.929	.804	.729	.889	.997	.998	.713	.858	.768	.924	.997	.942	.736

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix A.4 displays the Post hoc the Tukey analysis in the Risk Disclosure Index (RDI) as dependent variable by country.

Appendix A.4 Tukey RDI: By Country

Dependent Variable	Country	Country	Sig
RDI	Indonesia	Australia	.364
		Malaysia	.001*****
		Singapore	.167
	Australia	Indonesia	.364
		Malaysia	.133
		Singapore	.972
	Malaysia	Indonesia	.001*****
		Australia	.133
		Singapore	.307
	Singapore	Indonesia	.167
		Australia	.972
		Singapore	.307

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix A.5 gives evidence for the Post hoc Tukey analysis in the Risk Disclosure Index (RDI) as dependent variable by year.

Appendix A.5 Tukey RDI: By Year

Dependent Variable	Year	Year	Sig
RDI	2007	2008	.025**
		2009	.000*
	2008	2007	.025**
		2009	.410
	2009	2007	.000*
		2008	.410

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix A.6 illustrates the Post hoc Tukey analysis results in the Risk Disclosure Index (RDI) as dependent variable by country and year.

Appendix A.6 Tukey RDI: By Country and Year

Country	Country	RDI 2007	RDI 2008	RDI 2009
Indonesia	Australia	.236	.288	.823
	Malaysia	.001*	.003*	.021**
	Singapore	.085	.164	.623
Australia	Indonesia	.236	.288	.823
	Malaysia	.155	.307	.175
	Singapore	.962	.990	.986
Malaysia	Indonesia	.001*	.003*	.021**
	Australia	.155	.307	.175
	Singapore	.369	.478	.325
Singapore	Indonesia	.085***	.164	.623
	Australia	.962	.990	.986
	Malaysia	.369	.478	.325

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix A.7 provides evidence for the Post hoc Tukey analysis in the five sub-categories of Risk Disclosure Index (RDI) as dependent variable by country.

Appendix A.7 Tukey Five sub RDI: By Country

Country	Country	BRDI	SRDI	ORDI	MRDI	CRDI
Indonesia	Australia	.000*	.000*	.000*	.008**	.145
	Malaysia	.000*	.873	.000*	.998	.990
	Singapore	.012**	.000*	.000*	.963	1.000
Australia	Indonesia	.000*	.000*	.000*	.008**	.145
	Malaysia	.258	.000*	.000*	.015**	.262
	Singapore	.032**	.094***	.074***	.035**	.178
Malaysia	Indonesia	.000*	.873	.000*	.998	.990
	Australia	.258	.000*	.000*	.015**	.262
	Singapore	.805	.004*	.001*	.991	.997
Singapore	Indonesia	.012**	.000*	.000*	.963	1.000
	Australia	.032**	.094***	.074***	.035**	.178
	Malaysia	.805	.004*	.001*	.991	.997

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix A.8 displays the Post hoc Tukey analysis results in the five sub-categories of Risk Disclosure Index (RDI) as dependent variable by year.

Appendix A.8 Tukey Five sub RDI: By year

Year	Year	BRDI	SRDI	ORDI	MRDI	CRDI
2007	2008	.552	.002*	.529	.018**	.963
	2009	.047	.000*	.581	.015**	.186
2008	2007	.552	.002*	.529	.018**	.963
	2009	.375	.649	.996	.998	.296
2009	2007	.047**	.000*	.581	.015**	.186
	2008	.375	.649	.996	.998	.296

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix A.9 provides evidence for the Post hoc Tukey analysis in the five sub-categories of Risk Disclosure Index (RDI) as dependent variable by country and year.

Appendix A.9 Tukey 5 sub RDI: By Country and Year

Country	Country	BRDI 2007	SRDI 2007	ORDI 2007	MRDI 2007	CRDI 2007	BRDI 2008	SRDI 2008	ORDI 2008	MRDI 2008	CRDI 2008	BRDI 2009	SRDI 2009	ORDI 2009	MRDI 2009	CRDI 2009
Indonesia	Australia	.000*	.000*	.000*	.040**	.888	.025**	.014**	.000*	.967	.812	.025**	.003*	.000*	.043**	.180
	Malaysia	.011**	.733	.000*	.218	.888	.321	.958	.000*	.601	.998	.166	.807	.000*	1.000	.741
	Singapore	.036**	.006**	.000*	.378	.888	.645	.270	.000*	.758	.998	.462	.107	.000*	.955	.741
Australia	Indonesia	.000*	.000*	.000*	.040**	.888	.025**	.014**	.000*	.967	.812	.025**	.003*	.000*	.043**	.180
	Malaysia	.587	.001*	.000*	.880	.474	.669	.003*	.015**	.324	.893	.864	.046**	.013**	.047**	.741
	Singapore	.339	.353	.111	.708	.474	.342	.605	.404	.471	.712	.509	.602	.969	.146	.741
Malaysia	Indonesia	.011**	.733	.000*	.218	.888	.321	.958	.000*	.601	.998	.166	.807	.000*	1.000	.741
	Australia	.587	.001*	.000*	.880	.474	.669	.003*	.015**	.324	.893	.864	.046**	.013**	.047**	.741
	Singapore	.976	.104	.088***	.988	1.000	.950	.098***	.462	.994	.985	.930	.512	.047**	.963	1.000
Singapore	Indonesia	.036**	.006*	.000*	.378	.888	.645	.270	.000*	.758	.998	.462	.107	.000*	.955	.741
	Australia	.339	.353	.111	.708	.474	.342	.605	.404	.471	.712	.509	.602	.969	.146	.741
	Malaysia	.976	.104	.088***	.988	1.000	.950	.098***	.462	.994	.985	.930	.512	.047**	.963	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

From Appendix A (1-9) Post hoc Tukey analysis there are clear conclusion for this thesis which are:

- Appendix A.1 provides evidence that for firm size, Australian manufacturing listed firm size is significantly higher than Indonesian and Singaporean. For managerial ownership, Indonesian manufacturing listed companies is statistically lower than all three other countries manufacturing listed companies. Appendix A.1 also shows that Indonesian age of business is significantly higher than the three others counties. Indonesian manufacturing listed companies leverage is significantly higher than three other countries companies' leverage. Also, the Australian companies profit mean is statistically significantly lower than all three other countries.
- Appendix A.2 reveals that there is no statistically significant predictor variables (size, managerial ownership, board independent, leverage, profit, age of business) in 2007, 2008 or 2009.
- Appendix A.3 further reveals that in 2007, 2008, and 2009 Indonesian manufacturing listed companies managerial ownership is significantly lower than all three other countries. The control variable analysis shows that Indonesia companies' age of business is significantly higher than the three other countries in 2007, 2008, and 2009. In 2007, Indonesian companies' leverage is significantly different with Australian and Malaysian firms. Australian companies' profit figure is statistically significant lower than all three other countries. Moreover, in 2009 Australian companies' profits are significantly lower than the three other countries.
- Appendix A.4 shows that RDI between Indonesian manufacturing listed companies and Malaysian manufacturing listed companies is statistically significantly different.
- Appendix A.5 reveals that RDI 2007 is statistically significantly lower than RDI 2008 and 2009.
- Appendix A.6 illustrates that in 2007, 2008, and 2009 RDI in Indonesian manufacturing listed companies are statistically significantly lower than Malaysian manufacturing listed companies.
- Appendix A.7 notes that Indonesian companies BRDI are significantly lower with all three other countries companies' BRDI score. Australian companies' BRDI are significantly higher than Singaporean companies' BRDI. Indonesian and Malaysian companies' SRDI are significantly higher than Singaporean and Australian companies' SRDI. Indonesian companies' ORDI are significantly lower with all three other countries companies' ORDI. Finally, Australian companies MRDI is significantly lower with all three other countries companies MRDI.
- Appendix A.8 highlights further details noting that BRDI 2007 is significantly lower with BRDI 2009, SRDI 2007 is significantly lower than SRDI 2008 and 2009. MRDI 2007 is significantly lower with MRDI 2008 and 2009. Finally, ORDI and CRDI scores are not statistically different over the three year GFC period.

- Appendix A.9 reveals that in 2007 Indonesian companies' BRDI are significantly lower than all three other countries companies' BRDI. In 2008 and 2009 Indonesian companies' BRDI are only significant lower than Australian companies' BRDI. In 2007, Indonesian and Malaysian companies' SRDI are significantly higher than Singaporean and Australian companies' SRDI. In 2008 and 2009 only Australian companies are significantly lower than Indonesian and Malaysian companies' SRDI. In 2007, 2008, 2009 Indonesian companies' ORDI are significantly lower than all three other countries companies' ORDI. In 2007 and 2009 Indonesian companies' MRDI are significantly higher than Australian companies MRDI.

APPENDIX B: Pearson Correlation in Additional Analysis

Appendix B1- B38 provides evidence on the Pearson Correlation for the additional analysis (five sub-categories of RDI, RDI change and five sub-categories of RDI change) regression model over the different years and pooled data.

Appendix B.1 Pearson Correlation BRDI 2007

	BRDI 2007	CTY	FSIZE 2007	Man Own 2007	Board Ind 2007	Lev 2007	Prof 2007	Aud 2007	AgeBus 2007
BRDI2007	1.000								
CTY	.148**	1.000							
FSIZE2007	.268*	.005	1.000						
ManOwn2007	-.142**	.235*	-.198*	1.000					
BoardInd2007	.182*	.070	.232*	-.125**	1.000				
Lev2007	-.027	-.131**	.184*	-.190*	.131**	1.000			
Prof2007	.107***	.080	.364*	-.002	.064	-.210*	1.000		
Aud2007	-.275*	-.298*	-.339*	.161**	-.179*	.013	-.200*	1.000	
AgeBus2007	.155**	-.217*	.328*	-.389*	.141**	.284*	.142**	-.259*	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.2 Pearson Correlation BRDI 2008

	BRDI 2008	CTY	FSIZE 2008	Man Own 2008	Board Ind 2008	Lev 2008	Prof 2008	Aud 2008	AgeBus 2008
BRDI2008	1.000								
CTY	.053	1.000							
FSIZE2008	.300*	.007	1.000						
ManOwn2008	-.155**	.273*	-.154*	1.000					
BoardInd2008	.225*	.088	.251*	-.051	1.000				
Lev2008	-.030	-.148**	.137**	-.143**	.102***	1.000			
Prof2008	.051	-.003	.224	-.008	-.007	-.004	1.000		
Aud2008	-.244*	-.312*	-.294*	.090	-.264*	.032	-.086	1.000	
AgeBus2008	.126**	-.217*	.308*	-.365*	.059	.279*	.083	-.260*	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.3 Pearson Correlation BRDI 2009

	BRDI 2009	CTY	FSIZE 2009	Man Own 2009	Board Ind 2009	Lev 2009	Prof 2009	Aud 2009	AgeBus 2009
BRDI2009	1.000								
CTY	.080	1.000							
SIZE2009	.276*	-.019	1.000						
ManOwn2009	-.161**	.243*	-.161*	1.000					
BoardInd2009	.056	.036	.254*	-.143**	1.000				
Lev2009	-.062	-.146**	.124**	-.114***	.129**	1.000			
Prof2009	.112***	.010	.235***	-.068	.137**	.154**	1.000		
Aud2009	-.219*	-.294*	-.329*	.086	-.293*	.067	-.217*	1.000	
AgeBus2009	.089	-.217*	.316*	-.352*	.145**	.215*	.214*	-.230*	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.4 Pearson Correlation BRDI Pooled

	BRDI pooled	CTY	SIZE pooled	Man Own pooled	Board Ind pooled	Lev pooled	Prof pooled	Aud pooled	AgeBus pooled
BRDI pooled	1.000								
CTY	.093**	1.000							
SIZE pooled	.282*	-.002	1.000						
ManOwn pooled	-.154*	.250*	-.172*	1.000					
BoardInd pooled	.158*	.064**	.247*	-.109*	1.000				
Lev pooled	-.041	-.141*	.146*	-.147*	.120*	1.000			
Prof pooled	.080**	.025	.263*	-.020	.052	-.017	1.000		
Aud pooled	-.245*	-.301*	-.321*	.114*	-.245*	.037	-.153*	1.000	
AgeBus pooled	.126*	-.217*	.318*	-.369*	.117*	.257*	.134*	-.249*	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.5 Pearson Correlation SRDI 2007

	SRDI 2007	CTY	SIZE 2007	Man Own 2007	Board Ind 2007	Lev 2007	Prof 2007	Aud 2007	AgeBus 2007
SRDI 2007	1.000								
CTY	-.127**	1.000							
SIZE 2007	.045	.005	1.000						
ManOwn 2007	-.247*	.235*	-.198*	1.000					
BoardInd 2007	.154**	.070	.232*	-.125**	1.000				
Lev 2007	.080	-.131**	.184*	-.190*	.131**	1.000			
Prof 2007	.177*	.080	.364*	-.002	.064	-.210*	1.000		
Aud 2007	-.012	-.298*	-.339*	.161**	-.179*	.013	-.200*	1.000	
AgeBus 2007	.147**	-.217*	.328*	-.389*	.141**	.284*	.142**	-.259*	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.6 Pearson Correlation SRDI 2008

	SRDI 2008	CTY	SIZE 2008	Man Own 2008	Board Ind 2008	Lev 2008	Prof 2008	Aud 2008	AgeBus 2008
SRDI 2008	1.000								
CTY	-.041	1.000							
SIZE 2008	.234*	.007	1.000						
ManOwn 2008	-.206*	.273*	-.154*	1.000					
BoardInd 2008	.227*	.088	.251*	-.051	1.000				
Lev 2008	.058	-.148**	.137**	-.143**	.102***	1.000			
Prof 2008	.229*	-.003	.224	-.008	-.007	-.004	1.000		
Aud 2008	-.105***	-.312*	-.294*	.090	-.264*	.032	-.086	1.000	
AgeBus 2008	.076	-.217*	.308*	-.365*	.059	.279*	.083	-.260*	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.7 Pearson Correlation SRDI 2009

	SRDI 2009	CTY	SIZE 2009	Man Own 2009	Board Ind 2009	Lev 2009	Prof 2009	Aud 2009	AgeBus 2009
SRDI 2009	1.000								
CTY	-.092***	1.000							
SIZE 2009	.174*	-.019	1.000						
ManOwn 2009	-.125**	.243*	-.161*	1.000					
BoardInd 2009	.171*	.036	.254*	-.143**	1.000				
Lev 2009	.115***	-.146**	.124**	-.114***	.129**	1.000			
Prof 2009	.214*	.010	.235***	-.068	.137**	.154**	1.000		
Aud 2009	-.086	-.294*	-.329*	.086	-.293*	.067	-.217*	1.000	
AgeBus 2009	.124**	-.217*	.316*	-.352*	.145**	.215*	.214*	-.230*	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.8 Pearson Correlation SRDI Pooled

	SRDI pooled	CTY	SIZE pooled	Man Own pooled	Board Ind pooled	Lev pooled	Prof pooled	Aud pooled	AgeBus pooled
SRDI pooled	1.000								
CTY	-.083**	1.000							
SIZE pooled	.156*	-.002	1.000						
ManOwn pooled	-.194*	.250*	-.172*	1.000					
BoardInd pooled	.190*	.064**	.247*	-.109*	1.000				
Lev pooled	.084**	-.141*	.146*	-.147*	.120*	1.000			
Prof pooled	.194*	.025	.263*	-.020	.052	-.017	1.000		
Aud pooled	-.070**	-.301*	-.321*	.114*	-.245*	.037	-.153*	1.000	
AgeBus pooled	.117*	-.217*	.318*	-.369*	.117*	.257*	.134*	-.249*	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.9 Pearson Correlation ORDI 2007

	ORDI 2007	CTY	SIZE 2007	Man Own 2007	Board Ind 2007	Lev 2007	Prof 2007	Aud 2007	AgeBus 2007
ORDI 2007	1.000								
CTY	.446*	1.000							
SIZE 2007	-.086	.005	1.000						
ManOwn 2007	.090	.235*	-.198*	1.000					
BoardInd 2007	.090	.070	.232*	-.125**	1.000				
Lev 2007	-.146**	-.131**	.184*	-.190*	.131**	1.000			
Prof 2007	.013	.080	.364*	-.002	.064	-.210*	1.000		
Aud 2007	-.152**	-.298*	-.339*	.161**	-.179*	.013	-.200*	1.000	
AgeBus 2007	-.114***	-.217*	.328*	-.389*	.141**	.284*	.142**	-.259*	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.10 Pearson Correlation ORDI 2008

	ORDI 2008	CTY	SIZE 2008	Man Own 2008	Board Ind 2008	Lev 2008	Prof 2008	Aud 2008	AgeBus 2008
ORDI 2008	1.000								
CTY	.424*	1.000							
SIZE 2008	.004	.007	1.000						
ManOwn 2008	.117**	.273*	-.154*	1.000					
BoardInd 2008	.050	.088	.251*	-.051	1.000				
Lev 2008	-.153**	-.148**	.137**	-.143**	.102***	1.000			
Prof 2008	.102***	-.003	.224	-.008	-.007	-.004	1.000		
Aud 2008	-.083	-.312*	-.294*	.090	-.264*	.032	-.086	1.000	
AgeBus 2008	-.134**	-.217*	.308*	-.365*	.059	.279*	.083	-.260*	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.11 Pearson Correlation ORDI 2009

	ORDI 2009	CTY	SIZE 2009	Man Own 2009	Board Ind 2009	Lev 2009	Prof 2009	Aud 2009	AgeBus 2009
ORDI 2009	1.000								
CTY	.338*	1.000							
SIZE 2009	-.027	-.019	1.000						
ManOwn 2009	.170*	.243*	-.161*	1.000					
BoardInd 2009	-.003	.036	.254*	-.143**	1.000				
Lev 2009	-.142**	-.146**	.124**	-.114***	.129**	1.000			
Prof 2009	.056	.010	.235***	-.068	.137**	.154**	1.000		
Aud 2009	-.082	-.294*	-.329*	.086	-.293*	.067	-.217*	1.000	
AgeBus 2009	-.150**	-.217*	.316*	-.352*	.145**	.215*	.214*	-.230*	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.12 Pearson Correlation ORDI Pooled

	ORDI pooled	CTY	SIZE pooled	Man Own pooled	Board Ind pooled	Lev pooled	Prof pooled	Aud pooled	AgeBus pooled
ORDI pooled	1.000								
CTY	.401*	1.000							
SIZE pooled	-.035	-.002	1.000						
ManOwn pooled	.124*	.250*	-.172*	1.000					
BoardInd pooled	.046	.064**	.247*	-.109*	1.000				
Lev pooled	-.146*	-.141*	.146*	-.147*	.120*	1.000			
Prof pooled	.057***	.025	.263*	-.020	.052	-.017	1.000		
Aud pooled	-.106*	-.301*	-.321*	.114*	-.245*	.037	-.153*	1.000	
AgeBus pooled	-.131*	-.217*	.318*	-.369*	.117*	.257*	.134*	-.249*	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.13 Pearson Correlation MRDI 2007

	MRDI 2007	CTY	SIZE 2007	Man Own 2007	Board Ind 2007	Lev 2007	Prof 2007	Aud 2007	AgeBus 2007
MRDI 2007	1.000								
CTY	-.090	1.000							
SIZE 2007	.360*	.005	1.000						
ManOwn 2007	-.172*	.235*	-.198*	1.000					
BoardInd 2007	.162**	.070	.242*	-.125**	1.000				
Lev 2007	.178*	-.131**	.184*	-.190*	.131**	1.000			
Prof 2007	.203*	.080	.364*	-.002	.064	-.210*	1.000		
Aud 2007	-.185*	-.298*	-.339*	.161**	-.179*	.013	-.200*	1.000	
AgeBus 2007	.276*	-.217*	.328*	-.389*	.141**	.284*	.142**	-.259*	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.14 Pearson Correlation MRDI 2008

	MRDI 2008	CTY	SIZE 2008	Man Own 2008	Board Ind 2008	Lev 2008	Prof 2008	Aud 2008	AgeBus 2008
MRDI 2008	1.000								
CTY	.104***	1.000							
SIZE 2008	.086*	.007	1.000						
ManOwn 2008	-.053	.273*	-.154*	1.000					
BoardInd 2008	.143**	.088	.251*	-.051	1.000				
Lev 2008	.172*	-.148**	.137**	-.143**	.102***	1.000			
Prof 2008	.200*	-.003	.224	-.008	-.007	-.004	1.000		
Aud 2008	-.077	-.312*	-.294*	.090	-.264*	.032	-.086	1.000	
AgeBus 2008	.185*	-.217*	.308*	-.365*	.059	.279*	.083	-.260*	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.15 Pearson Correlation MRDI 2009

	MRDI 2009	CTY	SIZE 2009	Man Own 2009	Board Ind 2009	Lev 2009	Prof 2009	Aud 2009	AgeBus 2009
MRDI 2009	1.000								
CTY	.024	1.000							
SIZE 2009	-.005***	-.019	1.000						
ManOwn 2009	-.018	.243*	-.161*	1.000					
BoardInd 2009	.127**	.036	.254*	-.143**	1.000				
Lev 2009	.163**	-.146**	.124**	-.114***	.129**	1.000			
Prof 2009	.269*	.010	.235***	-.068	.137**	.154**	1.000		
Aud 2009	.022	-.294*	-.329*	.086	-.293*	.067	-.217*	1.000	
AgeBus 2009	.115***	-.217*	.316*	-.352*	.145**	.215*	.214*	-.230*	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.16 Pearson Correlation MRDI Pooled

	MRDI pooled	CTY	SIZE pooled	Man Own pooled	Board Ind pooled	Lev pooled	Prof pooled	Aud pooled	AgeBus pooled
MRDI pooled	1.000								
CTY	.020	1.000							
SIZE pooled	.276*	.003	1.000						
ManOwn pooled	-.079**	.250*	-.308*	1.000					
BoardInd pooled	.146*	.064**	.236*	-.109*	1.000				
Lev pooled	.170*	-.144**	.240*	-.146*	.119*	1.000			
Prof pooled	.208*	.027	.376*	-.019	.053	-.009	1.000		
Aud pooled	-.073**	-.301*	-.400*	.114*	-.245*	.034	-.153*	1.000	
AgeBus pooled	.187*	-.217*	.437*	-.369*	.117*	.257*	.134*	-.249*	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.17 Pearson Correlation CRDI 2007

	CRDI 2007	CTY	SIZE 2007	Man Own 2007	Board Ind 2007	Lev 2007	Prof 2007	Aud 2007	AgeBus 2007
CRDI 2007	1.000								
CTY	.081	1.000							
SIZE 2007	.090	.005	1.000						
ManOwn 2007	-.056	.235*	-.198*	1.000					
BoardInd 2007	.101***	.070	.232*	-.125**	1.000				
Lev 2007	.010	-.131**	.184*	-.190*	.131**	1.000			
Prof 2007	.143**	.080	.364*	-.002	.064	-.210*	1.000		
Aud 2007	-.101***	-.298**	-.339*	.161**	-.179*	.013	-.200*	1.000	
AgeBus 2007	-.002	-.217*	.328*	-.389*	.141**	.284*	.142**	-.259*	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.18 Pearson Correlation CRDI 2008

	CRDI 2008	CTY	SIZE 2008	Man Own 2008	Board Ind 2008	Lev 2008	Prof 2008	Aud 2008	AgeBus 2008
CRDI 2008	1.000								
CTY	.028	1.000							
SIZE 2008	.080	.007	1.000						
ManOwn 2008	-.033	.273*	-.154*	1.000					
BoardInd 2008	-.050	.088	.251*	-.051	1.000				
Lev 2008	-.034	-.148**	.137**	-.143**	.102***	1.000			
Prof 2008	.081	-.003*	.224	-.008	-.007	-.004	1.000		
Aud 2008	-.054	-.312*	-.294*	.090	-.264*	.032	-.086	1.000	
AgeBus 2008	-.014	-.217*	.308*	-.365*	.059	.279*	.083	-.260*	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.19 Pearson Correlation CRDI 2009

	CRDI 2009	CTY	SIZE 2009	Man Own 2009	Board Ind 2009	Lev 2009	Prof 2009	Aud 2009	AgeBus 2009
CRDI 2009	1.000								
CTY	-.045	1.000							
SIZE 2009	.120	-.019	1.000						
ManOwn 2009	.000	.243*	-.161*	1.000					
BoardInd 2009	-.021	.036	.254*	-.143**	1.000				
Lev 2009	.026	-.146**	.124**	-.114***	.129**	1.000			
Prof 2009	.130**	.010	.235***	-.068	.137**	.154**	1.000		
Aud 2009	.007	-.294*	-.329*	.086	-.293*	.067	-.217*	1.000	
AgeBus 2009	-.006	-.217*	.316*	-.352*	.145**	.215*	.214*	-.230*	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.20 Pearson Correlation CRDI Pooled

	CRDI pooled	CTY	SIZE pooled	Man Own pooled	Board Ind pooled	Lev pooled	Prof pooled	Aud pooled	AgeBus pooled
CRDI pooled	1.000								
CTY	.020	1.000							
SIZE pooled	.098*	-.002	1.000						
ManOwn pooled	-.031	.250*	-.172*	1.000					
BoardInd pooled	.012	.064**	.247*	-.109*	1.000				
Lev pooled	-.002	-.141*	.146*	-.147*	.120*	1.000			
Prof pooled	.110*	.025	.263*	-.020	.052	-.017	1.000		
Aud pooled	-.048	-.301*	-.321*	.114*	-.245*	.037	-.153*	1.000	
AgeBus pooled	-.006	-.217*	.318*	-.369*	.117*	.257*	.134*	-.249*	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.21 Pearson Correlation Change RDI 20072009

	Change RDI 20072009	CTY	Change Size 20072009	Change ManOwn 20072009	Change BoarInd 20072009	Change Lev 20072009	Change Prof 20072009
ChangeRDI 20072009	1.000						
CTY	-.084	1.000					
ChangeSize 20072009	-.025	-.171*	1.000				
ChangeManOwn 20072009	-.041	-.002	-.055	1.000			
ChangeBoarInd 20072009	-.008	-.046	-.007	-.041	1.000		
ChangeLev 20072009	.062	-.077	.140**	.009	.039	1.000	
ChangeProf 20072009	-.101***	-.068	.108***	.066	.081	-.005	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.22 Pearson Correlation Change RDI 20072008

	Change RDI 20072008	CTY	Change Size 20072008	Change ManOwn 20072008	Change BoarInd 20072008	Change Lev 20072008	Change Prof 20072008
ChangeRDI 20072008	1.000						
CTY	-.017	1.000					
ChangeSize 20072008	-.002	.019	1.000				
ChangeManOwn 20072008	-.153**	.042	-.064	1.000			
ChangeBoarInd 20072008	.050	.029	-.060	-.066	1.000		
ChangeLev 20072008	.035	-.103***	.073	.041	.076	1.000	
ChangeProf 20072008	-.054	-.061	.215*	-.019	-.076	.099***	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.23 Pearson Correlation Change RDI 20082009

	Change RDI 20082009	CTY	ChangeLSize 20082009	Change ManOwn 20082009	Change BoarInd 20082009	Change Lev 20082009	Change Prof 20082009
ChangeRDI 20082009	1.000						
CTY	-.081	1.000					
ChangeSize 20082009	.003	-.296*	1.000				
ChangeManOwn 20082009	.050	-.063	.041	1.000			
ChangeBoarInd 20082009	.015	-.083	.090	.041	1.000		
ChangeLev 20082009	-.061	.008	.218*	-.038	.006	1.000	
ChangeProf 20082009	-.080	.013	.216*	.025	-.080	-.017	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.24 Pearson Correlation Change ORDI 20072009

	Change ORDI 20092007	CTY	Change Size 20072009	Change ManOwn 20072009	Change BoarInd 20072009	Change Leverage 20072009	Change Profit 20072009
ChangeORDI 20092007	1.000						
COUNTRY	-.126**	1.000					
ChangeSize 20092007	.031	-.181*	1.000				
ChangeManOwn 20092007	.017	-.002	-.060	1.000			
ChangeBoarInd 20092007	.011	-.046	-.012	-.041	1.000		
ChangeLeverage 20092007	.033	-.095	.170**	.005	.047	1.000	
ChangeProfit 20092007	-.109***	-.056	.105***	.066	.077	.049	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.25 Pearson Correlation Change BRDI 20072009

	Change BRDI 20072009	CTY	Change Size 20072009	Change ManOwn 20072009	Change BoarInd 20072009	Change Leverage 20072009	Change Profit 20072009
ChangeBRDI 20092007	1.000						
COUNTRY	-.098***	1.000					
ChangeSize 20092007	.017	-.181*	1.000				
ChangeManOwn 20092007	-.099***	-.002	-.060	1.000			
ChangeBoarInd 20092007	-.024	-.046	-.012	-.041	1.000		
ChangeLeverage 20092007	.011	-.095	.170**	.005	.047	1.000	
ChangeProfit 20092007	-.057	-.056	.105***	.066	.077	.049	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.26 Pearson Correlation Change CRDI 20072009

	Change CRDI 20072009	CTY	Change Size 20072009	Change ManOwn 20072009	Change BoarInd 20072009	Change Leverage 20072009	Change Profit 20072009
ChangeCRDI 20092007	1.000						
COUNTRY	-.143**	1.000					
ChangeSize 20092007	.012	-.181*	1.000				
ChangeManOwn 20092007	.030	-.002	-.060	1.000			
ChangeBoarInd 20092007	.130**	-.046	-.012	-.041	1.000		
ChangeLeverage 20092007	.029	-.095	.170**	.005	.047	1.000	
ChangeProfit 20092007	.001	-.056	.105***	.066	.077	.049	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.27 Pearson Correlation Change MRDI 20072009

	Change MRDI 20072009	CTY	Change Size 20072009	Change ManOwn 20072009	Change BoarInd 20072009	Change Leverage 20072009	Change Profit 20072009
ChangeMRDI 20092007	1.000						
COUNTRY	.089	1.000					
ChangeSize 20092007	-.085	-.181*	1.000				
ChangeManOwn 20092007	.077	-.002	-.060	1.000			
ChangeBoarInd 20092007	-.071	-.046	-.012	-.041	1.000		
ChangeLeverage 20092007	.134**	-.095	.170**	.005	.047	1.000	
ChangeProfit 20092007	-.037	-.056	.105	.066	.077	.049	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.28 Pearson Correlation Change SRDI 20072009

	Change SRDI 20072009	CTY	Change Size 20072009	Change ManOwn 20072009	Change BoarInd 20072009	Change Leverage 20072009	Change Profit 20072009
ChangeSRDI 20092007	1.000						
COUNTRY	.025	1.000					
ChangeSize 20092007	-.071	-.181*	1.000				
ChangeManOwn 20092007	-.076	-.002	-.060	1.000			
ChangeBoarInd 20092007	.006	-.046	-.012	-.041	1.000		
ChangeLeverage 20092007	.008	-.095	.170**	.005	.047	1.000	
ChangeProfit 20092007	-.107***	-.056	.105	.066	.077	.049	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.29 Pearson Correlation Change ORDI 20072008

	Change ORDI 20072008	CTY	Change Size 20072008	Change ManOwn 20072008	Change BoarInd 20072008	Change Leverage 20072008	Change Profit 20072008
ChangeORDI 20082007	1.000						
COUNTRY	-.047	1.000					
ChangeSize 20082007	.031	-.198	1.000				
ChangeManOwn 20082007	-.045	.042	-.054	1.000			
ChangeBoarInd 20082007	-.017	.029	-.091	-.066	1.000		
ChangeLeverage 20082007	.120**	-.104***	.060	.041	.077	1.000	
ChangeProfit 20082007	-.116**	-.057	.260*	-.019	-.078	.099***	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.30 Pearson Correlation Change BRDI 20072008

	Change BRDI 20072008	CTY	Change Size 20072008	Change ManOwn 20072008	Change BoarInd 20072008	Change Leverage 20072008	Change Profit 20072008
ChangeBRDI 20082007	1.000						
COUNTRY	-.125**	1.000					
ChangeSize 20082007	.057	-.198	1.000				
ChangeManOwn 20082007	-.057	.042	-.054	1.000			
ChangeBoarInd 20082007	.090	.029	-.091	-.066	1.000		
ChangeLeverage 20082007	-.004	-.104***	.060	.041	.077	1.000	
ChangeProfit 20082007	-.049	-.057	.260*	-.019	-.078	.099***	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.31Pearson Correlation Change CRDI 20072008

	Change CRDI 20072008	CTY	Change Size 20072008	Change ManOwn 20072008	Change BoarInd 20072008	Change Leverage 20072008	Change Profit 20072008
ChangeCRDI 20082007	1.000						
COUNTRY	-.063	1.000					
ChangeSize 20082007	.003	-.198	1.000				
ChangeManOwn 20082007	-.164*	.042	-.054	1.000			
ChangeBoarInd 20082007	.020	.029	-.091	-.066	1.000		
ChangeLeverage 20082007	.010	-.104***	.060	.041	.077	1.000	
ChangeProfit 20082007	.009	-.057	.260*	-.019	-.078	.099***	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.32 Pearson Correlation Change MRDI 20072008

	Change MRDI 20072008	CTY	Change Size 20072008	Change ManOwn 20072008	Change BoarInd 20072008	Change Leverage 20072008	Change Profit 20072008
ChangeMRDI 20082007	1.000						
COUNTRY	.181*	1.000					
ChangeSize 20082007	-.079	-.198	1.000				
ChangeManOwn 20082007	-.116**	.042	-.054	1.000			
ChangeBoarInd 20082007	-.072	.029	-.091	-.066	1.000		
ChangeLeverage 20082007	.071	-.104***	.060	.041	.077	1.000	
ChangeProfit 20082007	-.017	-.057	.260*	-.019	-.078	.099***	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.33 Pearson Correlation Change SRDI 20072008

	Change SRDI 20072008	CTY	Change Size 20072008	Change ManOwn 20072008	Change BoarInd 20072008	Change Leverage 20072008	Change Profit 20072008
ChangeSRDI 20082007	1.000						
COUNTRY	.092***	1.000					
ChangeSize 20082007	-.066	-.198	1.000				
ChangeManOwn 20082007	-.120**	.042	-.054	1.000			
ChangeBoarInd 20082007	.063	.029	-.091	-.066	1.000		
ChangeLeverage 20082007	-.068	-.104***	.060	.041	.077	1.000	
ChangeProfit 20082007	.035	-.057	.260*	-.019	-.078	.099***	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.34 Pearson Correlation Change ORDI 20082009

	Change ORDI 20082009	CTY	Change Size 20082009	Change ManOwn 20082009	Change BoarInd 20082009	Change Leverage 20082009	Change Profit 20082009
ChangeORDI 20092008	1.000						
COUNTRY	-.101***	1.000					
ChangeSize 20092008	.031	-.028*	1.000				
ChangeManOwn 20092008	.001	-.063	-.040	1.000			
ChangeBoarInd 20092008	-.033	-.083	.020	.041	1.000		
ChangeLeverage 20092008	.047	-.020	.310*	-.043	.032	1.000	
ChangeProfit 20092008	-.057	.020	.208*	.029	-.080	-.216	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.35 Pearson Correlation Change BRDI 20082009

	Change BRDI 20082009	CTY	Change Size 20082009	Change ManOwn 20082009	Change BoarInd 20082009	Change Leverage 20082009	Change Profit 20082009
ChangeBRDI 20092008	1.000						
COUNTRY	.040	1.000					
ChangeSize 20092008	-.105	-.028*	1.000				
ChangeManOwn 20092008	.067	-.063	-.040	1.000			
ChangeBoarInd 20092008	.017	-.083	.020	.041	1.000		
ChangeLeverage 20092008	-.041	-.020	.310*	-.043	.032	1.000	
ChangeProfit 20092008	-.204*	.020	.208*	.029	-.080	-.216	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.36 Pearson Correlation Change CRDI 20082009

	Change CRDI 20082009	CTY	Change Size 20082009	Change ManOwn 20082009	Change BoarInd 20082009	Change Leverage 20082009	Change Profit 20082009
ChangeCRDI 20092008	1.000						
COUNTRY	-.098***	1.000					
ChangeSize 20092008	.031	-.028*	1.000				
ChangeManOwn 20092008	.035	-.063	-.040	1.000			
ChangeBoarInd 20092008	.042	-.083	.020	.041	1.000		
ChangeLeverage 20092008	-.036	-.020	.310*	-.043	.032	1.000	
ChangeProfit 20092008	-.005	.020	.208*	.029	-.080	-.216	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.37 Pearson Correlation Change MRDI 20082009

	Change MRDI 20082009	CTY	Change Size 20082009	Change ManOwn 20082009	Change BoarInd 20082009	Change Leverage 20082009	Change Profit 20082009
ChangeMRDI 20092008	1.000						
COUNTRY	-.081	1.000					
ChangeSize 20092008	.020	-.028*	1.000				
ChangeManOwn 20092008	.029	-.063	-.040	1.000			
ChangeBoarInd 20092008	.000	-.083	.020	.041	1.000		
ChangeLeverage 20092008	.000	-.020	.310*	-.043	.032	1.000	
ChangeProfit 20092008	.069	.020	.208*	.029	-.080	-.216	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B.38 Pearson Correlation Change SRDI 20082009

	Change SRDI 20082009	CTY	Change Size 20082009	Change ManOwn 20082009	Change BoarInd 20082009	Change Leverage 20082009	Change Profit 20082009
ChangeSRDI 20092008	1.000						
COUNTRY	-.067	1.000					
ChangeSize 20092008	-.042	-.028*	1.000				
ChangeManOwn 20092008	-.003	-.063	-.040	1.000			
ChangeBoarInd 20092008	.026	-.083	.020	.041	1.000		
ChangeLeverage 20092008	-.086	-.020	.310*	-.043	.032	1.000	
ChangeProfit 20092008	.082	.020	.208*	.029	-.080	-.216	1.000

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix B (1- 38) provides evidence about Pearson correlations connected to the additional analysis regressions. The results reveal that the highest correlation is less than 0.8 in 2007, 2008, 2009 and pooled data. Given this 'non-high' correlation in each year's data, concerns about multicollinearity between independent and control variables is lessened for the 2007, 2008, 2009, and pooled years data in the additional analysis regressions.

Appendix B (1-38) also provides evidence regarding correlation between predictor variables change with five sub-categories of RDI, RDI change and five sub-categories of RDI change in the level of significance P = highly significant at 1% level, significant at 5% level, and moderately significant at 10% level. The directionality of these correlations is almost similar with additional analysis regressions coefficients.

APPENDIX C: RDI Change Multiple Regression Analysis: Average Predictor Variables

Appendix C (3 - 8) provides a comparison between results in the Sections 7.3 and 7.4 results (RDI change regressions) if the predictor variables are instead calculated as the average figure across the years for the continuous predictor variables. The results are almost similar from main chapter analysis in the Sections 7.3 and 7.4 results. The summary is in Appendices C.1 for RDI ∆ and C.2 for Sub-RDI ∆ Multiple Regression Analysis.

Appendix C.1 RDI ∆ Multiple Regression Analysis: Summary

RDI Model	CTY	Average Size	Average ManOwn	Average Boardind	Average Lev	Average Prof
RDI ∆2007-2009 (N = 200)	X	X	X	X	X	X
RDI ∆2007-2008 (N = 200)	X	X	X	X	X	X
RDI ∆2008-2009 (N = 200)	X	X	X	X	X	X

Legend: CTY = country; Size = natural log of total assets; ManOwn = managerial ownership; BoardInd = board independence; Lev = leverage; Prof = profitability; others control variables (auditor and age of business) are exclude in this model because there is only negligible change. HS denotes statistically highly significant at 1%; S denotes statistically significant at 5%: MS denotes statistically moderately significant at 10%, and X means not statistical significant.

Appendix C.2 Sub-RDI ∆ Multiple Regression Analysis: Summary

RDI Model (N = 200)	CTY	Average Size	Average ManOwn	Average Boardind	Average Lev	Average Prof
∆2007-2009						
BRDI	X	X	X	S	X	MS
SRDI	X	S	MS	X	X	X
ORDI	S	S	S	X	X	MS
MRDI	X	HS	X	X	X	X
CRDI	MS	X	X	MS	X	X
∆2007-2008						
BRDI	MS	X	X	X	X	X
SRDI	X	HS	X	X	X	X
ORDI	X	HS	X	X	X	HS
MRDI	S	HS	X	X	X	X
CRDI	X	X	X	S	X	X
∆2008-2009						
BRDI	X	X	X	X	X	X
SRDI	X	X	X	X	X	X
ORDI	S	X	S	X	X	X
MRDI	X	X	X	X	X	X
CRDI	X	X	X	X	X	X

Legend: CTY = country; Size = natural log of total assets; ManOwn = managerial ownership; BoardInd = board independence; Lev = leverage; Prof = profitability; Aud = auditor; others control variables (auditor and age of business) are exclude in this model because there is only negligible change. BRDI = business risk disclosure index; SRDI = strategic risk disclosure index; ORDI = operating risk disclosure index; MRDI = market risk disclosure index; CRDI = credit risk disclosure index; HS denotes statistically highly significant at 1%; S denotes statistically significant at 5%: MS denotes statistically moderately significant at 10%, and X means not statistical significant.

Appendix C.3 RDI ∆ Multiple Regression Analysis

		∆2007-2009			∆2007-2008			∆2008-2009		
Adjusted R^2		-.006			-.013			-.006		
Durbin Watson		2.097			1.995			1.949		
F statistic		.816			.575			.808		
Significance		.558			.750			.565		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.050	1.300	.195	-.016	-.461	.645	.024	1.808	.047
Country	(+)	-.008	-1.452	.148	-.002	-.447	.656	-.005	-.968	.226
Company Size Average	(+)	.001	-.319	.750	.007	1.641	.103	.006	.136	.165
Managerial Ownership Average	(-)	.055	1.581	.116	.032	.985	.326	.046	.621	.436
Board Independence Average	(+)	-.025	-.789	.431	-.017	-.592	.554	.00007	.002	.785
Leverage Average	(+)	.008	.402	.688	-.002	-.129	.898	-.046	-.852	.561
Profitability Average	(+)	.009	-323	.747	-.012	-.452	.652	-.025	-1.124	.393

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, n = 200

Appendix C.4 BRDI ∆ Multiple Regression Analysis

		∆2007-2009			∆2007-2008			∆2008-2009		
Adjusted R^2		.023			-.003			-.008		
Durbin Watson		1.951			1.847			2.128		
F statistic		1.774			.902			.730		
Significance		.106			.495			.626		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.111	1.968	.050	.036	.586	.559	.075	1.464	.145
Country	(+)	-.011	-1.365	.174	-.016	-1.824	.070***	.005	.676	.500
Company Size Average	(+)	.001	.107	.915	.006	.808	.420	-.005	-.860	.391
Managerial Ownership Average	(-)	.010	.200	.841	.029	.514	.608	-.017	-.371	.711
Board Independence Average	(+)	-.103	-.2.200	.029**	-.051	-1.012	.313	-.052	-1.212	.227
Leverage Average	(+)	-.013	-.416	.678	-.013	-.412	.681	.002	.075	.941
Profitability Average	(+)	.073	1.743	.083***	.018	.404	.686	.054	1.423	.156

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, n = 200

Appendix C.5 SRDI ∆ Multiple Regression Analysis

		∆2007-2009			∆2007-2008			∆2008-2009		
Adjusted R^2		.027			.059			.002		
Durbin Watson		2.045			2.275			1.979		
F statistic		1.913			3.080			1.064		
Significance		.081			.007			.386		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		-.100	-1.867	.063	-.151	-3.035	.003	.052	1.019	.310
Country	(+)	.000	-0.63	.950	.007	.991	.323	-.008	-1.057	.292
Company Size Average	(+)	.015	2.365	.019**	.021	3.520	.001*	-.006	-.955	.341
Managerial Ownership Average	(-)	.088	1.783	.076***	.034	.757	.450	.054	1.151	.251
Board Independence Average	(+)	.053	1.185	.237	.038	.913	.362	.015	.356	.722
Leverage Average	(+)	.019	.650	.517	-.008	-.287	.774	.026	.954	.341
Profitability Average	(+)	-.047	-1.171	.243	-.004	-.117	.907	-.041	-1.099	.273

*highly significant at 1% level, **significant at 5%, *** moderately significant at 10% level, n = 200

Appendix C.6 ORDI Δ Multiple Regression Analysis

		Δ2007-2009			Δ2007-2008			Δ2008-2009		
Adjusted R^2		.037			.053			.015		
Durbin Watson		2.032			2.056			1.895		
F statistic		2.266			2.873			1.505		
Significance		.039			.011			.178		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		-.071	-.835	.405	-.127	-1.820	.070	.056	.754	.452
Country	(+)	-.028	-2.335	.021**	-.007	-.742	.459	-.021	-1.992	.048**
Company Size Average	(+)	.020	1.994	.048**	.026	3.099	.002*	-.006	-.626	.532
Managerial Ownership Average	(-)	.190	2.427	.016**	.039	.613	.541	.151	2.219	.028**
Board Independence Average	(+)	-.019	-.267	.789	-.053	-.905	.367	.034	.545	.586
Leverage Average	(+)	-.016	-.346	.729	-.028	-.737	.462	.012	.296	.767
Profitability Average	(+)	-.109	-1.719	.087***	.-179	-3.433	.001*	.069	1.257	.210

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, n = 200

Appendix C.7 MRDI ∆ Multiple Regression Analysis

		∆2007-2009			∆2007-2008			∆2008-2009		
Adjusted R^2		.079			.077			-.013		
Durbin Watson		1.783			2.144			1.936		
F statistic		3.830			3.752			.587		
Significance		.001			.001			.740		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.197	3.528	.001	.108	2.149	.033	.089	1.656	.099
Country	(+)	.010	1.257	.210	.018	2.477	.014**	-.008	-1.028	.305
Company Size Average	(+)	-.030	-4.493	.000*	-.021	-3.565	.000*	-.009	-1.340	.182
Managerial Ownership Average	(-)	.006	.122	.903	.027	.595	.553	-.019	-.389	.698
Board Independence Average	(+)	.059	1.279	.203	.050	1.211	.227	.009	.208	.835
Leverage Average	(+)	.035	1.187	.237	.043	1.592	.113	-.007	-.244	.807
Profitability Average	(+)	.053	1.269	.206	.054	1.447	.149	-.002	-.049	.961

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, n = 200

Appendix C.8 CRDI Δ Multiple Regression Analysis

		Δ2007-2009			Δ2007-2008			Δ2008-2009		
Adjusted R^2		.012			-.001			-.012		
Durbin Watson		1.892			1.859			1.740		
F statistic		1.402			.956			.613		
Significance		.216			.457			.719		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.057	.492	.624	.032	.296	.767	.025	.245	.807
Country	(+)	-.029	-1.748	.082***	-.013	-.822	.412	-.016	-1.119	.265
Company Size Average	(+)	.014	.994	.321	.010	.798	.426	.003	.285	.776
Managerial Ownership Average	(-)	.025	.231	.817	.043	.434	.664	-.019	-.198	.843
Board Independence Average	(+)	-.174	-.1.791	.075***	-.186	-2.055	.041**	.012	.145	.885
Leverage Average	(+)	.055	.877	.382	-.005	-.082	.935	.060	1.087	.278
Profitability Average	(+)	-.022	-.248	.804	-.040	-.496	.621	.019	.244	.807

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, n = 200

The regression results according to appendices C.3 – C.8 are virtually the same with results in Sections 7.3 and 7.4. The results reveal that all the independent and control variables are not statistically significant between any of the years (2007-2009; 2007-2008; 2008-2009). Appendices C.3 – C.8 illustrate the predictive power of the model from the regression in the 2007, 2008 and 2009 and pooled data for risk disclosure categories' change if the predictor variables are calculated in the average figure. Key explanatory factors for risk disclosure categories highlighted from Appendices C.3 – C.8 are:

- The 'Country' variable is significant in 'operating risk' (ORDI) in the change between 2007-2009 and 2008-2009, and significant in 'market risk' (MRDI) in the change between 2007-2008.
- Change of Size is positively significant in 'strategy risk' (SRDI) ,'operating risk' (ORDI), and 'market risk' (MRDI)) in the change between 2007-2009, and 2007-2008.
- Managerial ownership change is positively significant for 'operating risk' (ORDI) in the change between 2007-2009 and 2008-2009.
- Board independence change is negatively significant in 'business risk' (BRDI) in the change between 2007-2009, and negatively significant in 'credit risk' (CRDI) in the change between 2007-2008. .
- Leverage change is not significant in all the regression.
- Profitability change is negatively significant for 'operating risk' (ORDI) in the change between 2007-2008.

Overall, change RDI is not easily predicted perhaps because only small changes in RDI over GFC period.

APPENDIX D: Sensitivity Analysis in the Additional Regression

Appendix D provides the sensitivity analysis in the additional analysis regressions in the different measurement of independent and control variables.

The sensitivity analysis (Appendices D.1 – D.35) for additional analysis regression tests the cross-sectional (within each year) associations between five sub categories of risk disclosure (business risk, strategy risk, operational risk, market risk, credit risk) and the predictor variables. For sensitivity analysis, country is measured with the country GDP, categorized based on effect of GFC, and categorized based on ex-colonial, legal system, and board system. Size is measured with the different measurement of size by log total revenue. Managerial ownership re-measured by categories based on the companies which have ≤ 15% and > 15% also ≤ 50% and > 50% managerial ownership. This sensitivity analysis also measured board meeting to replace measurement of board independent for proxies of corporate governance.

Appendix D.1 BRDI Multiple Regression Analysis (Country = GDP Per Capita)

		2007			2008			2009			Pooled year		
Adjusted R^2		.150			.138			.116			.146		
Durbin Watson		1.494			1.819			1.616			1.634		
F statistic		5.385			4.987			4.256			13.849		
Significance		.000			.000			.000			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.258	2.694	.008	.235	2.474	.014	.322	3.392	.001	.271	4.967	.000
Country (GDP)	(+)	.0000002	3.452	.001*	.0000002	2.298	.023**	.000002	2.556	.011**	.0000002	4.680	.000*
Size	(+)	.022	2.246	.026**	.028	2.944	.004*	.029	3.168	.002*	.026	4.885	.000*
Managerial Ownership	(-)	-.134	-1.898	.059**	-.156	-2.127	.035**	-.172	-2.481	.014**	-.151	-3.693	.000*
Board Independence	(+)	.098	1.638	.103	.128	2.030	.044**	-.035	-.583	.561	.066	1.895	.059***
Leverage	(+)	-.046	-.945	.346	-.040	-.995	.321	-.042	-1.076	.283	-.041	-1.737	.083***
Profitability	(+)	.016	.287	.775	.013	.344	.731	.099	1.641	.103	.029	1.062	.289
Auditor	(+)	-.040	-1.469	.144	-.034	-1.228	.221	-.029	-1.028	.305	-.035	-2.215	.027**
Age of Business	(+)	.000	.664	.507	.000006	.129	.898	.000	-.597	.551	.000005	.197	.844

*highly significant at 1% level, **significant at 5% level, ***moderately significant at 10% level

Appendix D.2 SRDI Multiple Regression Analysis (Country = GDP Per Capita)

		2007			2008			2009			Pooled year		
Adjusted R^2		.155			.163			.078			.132		
Durbin Watson		1.820			1.903			1.882			1.799		
F statistic		5.556			5.833			3.099			12.390		
Significance		.000			.000			.003			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.228	3.421	.001	.111	1.519	.131	.142	1.831	.069	.149	3.531	.000
Country (GDP)	(+)	-.0000002	-3.832	.000*	-.0000002	-3.082	.002*	-.0000002	-2.516	.013**	-.0000002	-5.264	.000*
Size	(+)	-.010	-1.449	.149	.014	1.851	.066***	.009	1.185	.238	.005	1.218	.224
Managerial Ownership	(-)	-.099	-2.023	.044**	-.114	-2.020	.045**	-.028	-.495	.621	-.082	-2.582	.010*
Board Independence	(+)	.080	1.927	.055**	.128	2.636	.009*	.067	1.375	.171	.098	3.631	.000*
Leverage	(+)	.019	.558	.578	-.005	-.152	.880	.017	.546	.586	.006	.310	.756
Profitability	(+)	.093	2.369	.019**	.067	2.330	.021**	.056	1.123	.263	.061	2.922	.004*
Auditor	(+)	-.002	-.127	.899	-.015	-.696	.487	-.012	-.507	.613	-.009	-.694	.488
Age of Business	(+)	.000	.353	.724	.000	-1.091	.277	.000001	.035	.972	-.000007	-.342	.732

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix D.3 ORDI Multiple Regression Analysis (Country = GDP Per Capita)

		2007			2008			2009			Pooled year		
Adjusted R^2		.045			.041			.034			.054		
Durbin Watson		1.221			1.149			1.192			1.174		
F statistic		2.176			2.056			1.875			5.280		
Significance		.031			.042			.066			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.742	5.389	.000	.516	3.905	.000	.565	3.939	.000	.605	7.719	.000
Country (GDP)	(+)	.00000005	.520	.604	.0000002	1.921	.056***	.0000001	.963	.337	.0000001	1.970	.049**
Size	(+)	-.021	-1.491	.138	.000	-.025	.980	-.001	-.104	.917	-.008	-1.002	.317
Managerial Ownership	(-)	.059	.586	.559	.048	.471	.638	.156	1.493	.137	.083	1.412	.159
Board Independence	(+)	.137	1.595	.112	.061	.693	.489	.016	.177	.860	.070	1.394	.164
Leverage	(+)	-.082	-1.179	.240	-.074	-1.327	.186	-.082	-1.408	.161	-.073	-2.146	.032**
Profitability	(+)	.010	.128	.898	.096	1.829	.069***	.134	1.463	.145	.074	1.917	.056***
Auditor	(+)	-.097	-2.478	.014**	-.029	-.748	.455	-.037	-.880	.380	-.055	-2.392	.017**
Age of Business	(+)	-.001	-1.114	.266	-.001	-1.250	.213	-.001	-1.470	.143	-.001	-2.230	.026**

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix D.4 MRDI Multiple Regression Analysis (Country = GDP Per Capita)

		2007			2008			2009			Pooled year		
Adjusted R^2		.152			.067			.079			.087		
Durbin Watson		2.350			1.882			1.525			1.774		
F statistic		5.449			2.788			3.134			8.153		
Significance		.000			.006			.002			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.033	.666	.506	.147	2.280	.024	.178	2.713	.007	.124	3.532	.000
Country (GDP)	(+)	-.0000004	-1.071	.285	.0000002	.429	.669	-.0000002	-.557	.579	-.0000002	-.612	.541
Size	(+)	.015	2.847	.005*	-.005	-.720	.472	-.008	-1.328	.186	.000	.032	.975
Managerial Ownership	(-)	-.011	-.310	.757	.008	.155	.877	.027	.564	.574	.003	.101	.920
Board Independence	(+)	.027	.852	.396	.080	1.867	.063***	.068	1.653	.100	.059	2.613	.009*
Leverage	(+)	.035	1.373	.171	.049	1.806	.072***	.036	1.331	.185	.046	3.047	.002*
Profitability	(+)	.040	1.334	.184	.074	2.875	.004*	.132	3.158	.002*	.076	4.349	.000*
Auditor	(+)	-.011	-.802	.424	.000	-.006	.996	.019	.992	.322	.000	.016	.987
Age of Business	(+)	.000	1.507	.133	.001	1.848	.066***	.000	1.054	.293	.000	2.523	.012**

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix D.5 CRDI Multiple Regression Analysis (Country = GDP Per Capita)

		2007			2008			2009			Pooled year		
Adjusted R^2		.000			-.017			.000			.010		
Durbin Watson		1.711			1.805			1.677			1.742		
F statistic		.995			.587			.997			1.750		
Significance		.441			.788			.440			.084		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.469	2.884	.004	.468	2.888	.004	.326	1.871	.063	.409	4.316	.000
Country (GDP)	(+)	-.0000003	-.246	.806	-.0000006	-.564	.573	-.0000001	-.995	.321	-.0000008	-1.207	.228
Size	(+)	.001	.065	.949	.018	1.100	.273	.028	1.721	.087***	.017	1.833	.067***
Managerial Ownership	(-)	-.079	-.660	.510	-.055	-.440	.660	.023	.182	.856	-.036	-.507	.612
Board Independence	(+)	.106	1.043	.298	-.119	-1.101	.272	-.078	-.713	.477	-.025	-.404	.686
Leverage	(+)	.042	.510	.611	-.025	-.367	.714	.000	-.006	.995	-.005	-.113	.910
Profitability	(+)	.163	1.692	.092***	.044	.680	.497	.131	1.177	.241	.085	1.807	.071***
Auditor	(+)	-.044	-.943	.347	-.040	-.835	.405	.017	.331	.741	-.021	-.767	.444
Age of Business	(+)	-.001	-1.073	.285	-.001	-.828	.409	-.001	-.767	.444	-.001	-1.370	.171

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix D.6 BRDI Multiple Regression Analysis (Country = Effect GFC)

		2007			2008			2009			Pooled year		
Adjusted R^2		.097			.116			.086			.115		
Durbin Watson		1.475			1.771			1.598			1.602		
F statistic		3.686			4.258			3.326			10.714		
Significance		.001			.000			.001			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.333	3.342	.001	.305	3.153	.002	.398	4.157	.000	.340	6.108	.000
Country (Effect GFC)	(+)	.009	.361	.718	-.015	-.568	.571	.001	.024	.981	.000	-.032	.974
Size	(+)	.024	2.312	.022**	.029	2.974	.003*	.029	3.104	.002*	.027	4.898	.000*
Managerial Ownership	(-)	-.065	-.932	.352	-.111	-1.519	.130	-.136	-1.957	.052***	-.104	-2.571	.010*
Board Independence	(+)	.093	1.503	.134	.125	1.954	.052***	-.044	-.724	.470	.060	1.695	.091
Leverage	(+)	-.069	-1.397	.164	-.050	-1.237	.218	-.048	-1.231	.220	-.054	-2.238	.026**
Profitability	(+)	-.026	-.449	.654	-.004	-.109	.913	.038	.660	.510	-.004	-.136	.892
Auditor	(+)	-.062	-2.168	.031**	-.054	-1.860	.064***	-.050	-1.766	.079***	-.054	-3.295	.001*
Age of Business	(+)	.000	.594	.553	-7.123E-5	-.139	.890	.000	-.654	.514	-.000002	-.059	.953

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix D.7 SRDI Multiple Regression Analysis (Country = Effect GFC)

		2007			2008			2009			Pooled year		
Adjusted R^2		.092			.127			.047			.093		
Durbin Watson		1.714			1.865			1.867			1.754		
F statistic		3.523			4.631			2.234			8.715		
Significance		.001			.000			.027			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.149	2.153	.033	.030	.405	.686	.081	1.032	.303	.076	1.752	.080
Country (Effect GFC)	(+)	.013	.694	.488	.024	1.177	.240	.001	.024	.980	.013	1.163	.245
Size	(+)	-.011	-1.488	.138	.013	1.731	.085***	.009	1.175	.242	.005	1.112	.266
Managerial Ownership	(-)	-.157	-3.213	.002*	-.164	-2.903	.004*	-.057	-1.009	.314	-.126	-3.993	.000*
Board Independence	(+)	.080	1.840	.067***	.131	2.630	.009*	.074	1.501	.135	.101	3.669	.000*
Leverage	(+)	.035	1.018	.310	.006	.183	.855	.023	.708	.480	.017	.888	.375
Profitability	(+)	.120	2.968	.003*	.084	2.902	.004*	.105	2.220	.028**	.086	4.149	.000*
Auditor	(+)	.020	1.027	.306	.008	.343	.732	.005	.236	.813	.012	.918	.359
Age of Business	(+)	.000	.618	.537	.000	-.618	.537	.000004	.122	.903	.000004	.181	.857

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix D.8 ORDI Multiple Regression Analysis (Country = Effect GFC)

		2007			2008			2009			Pooled year		
Adjusted R^2		.215			.151			.109			.168		
Durbin Watson		1.482			1.232			1.268			1.293		
F statistic		7.826			5.408			4.028			16.127		
Significance		.000			.000			.000			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.534	4.254	.000	.399	3.193	.002	.450	3.302	.001	.460	6.246	.000
Country (Effect GFC)	(+)	.212	6.462	.000*	.179	5.372	.000*	.149	4.120	.000*	.180	9.241	.000*
Size	(+)	-.017	-1.293	.198	.001	.096	.924	.001	.043	.966	-.005	-.744	.457
Managerial Ownership	(-)	.028	.319	.750	.027	.287	.774	.128	1.290	.199	.056	1.036	.301
Board Independence	(+)	.090	1.153	.250	.038	.461	.646	-.001	-.007	.994	.042	.883	.378
Leverage	(+)	-.103	-1.663	.098***	-.084	-1.609	.109	-.079	-1.414	.159	-.081	-2.561	.011**
Profitability	(+)	-.063	-.857	.392	.052	1.080	.281	.035	.429	.668	.015	.412	.680
Auditor	(+)	-.036	-.991	.323	.012	.320	.750	-.008	-.207	.837	-.010	-.468	.640
Age of Business	(+)	.000	.249	.804	.000	-.401	.689	.000	-.675	.500	.000	-.549	.583

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix D.9 MRDI Multiple Regression Analysis (Country = Effect GFC)

		2007			2008			2009			Pooled year		
Adjusted R^2		.149			.090			.087			.093		
Durbin Watson		2.343			1.933			1.539			1.787		
F statistic		5.363			3.447			3.373			8.663		
Significance		.000			.001			.001			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.030	.603	.547	.116	1.808	.072	.141	2.180	.030	.099	2.821	.005
Country (Effect GFC)	(+)	-.010	-.763	.446	.038	2.216	.028**	.024	1.414	.159	.019	2.013	.045**
Size	(+)	.014	2.765	.006*	-.004	-.692	.490	-.008	-1.278	.203	.000	.079	.937
Managerial Ownership	(-)	-.021	-.585	.560	-.001	-.030	.976	.014	.289	.773	-.007	-.272	.785
Board Independence	(+)	.029	.932	.353	.076	1.789	.075***	.068	1.650	.101	.057	2.526	.012**
Leverage	(+)	.039	1.560	.120	.048	1.804	.073***	.038	1.420	.157	.047	3.142	.002*
Profitability	(+)	.049	1.669	.097***	.067	2.689	.008*	.131	3.360	.001*	.074	4.394	.000*
Auditor	(+)	-.011	-.740	.460	.010	.539	.590	.029	1.526	.129	.007	.728	.467
Age of Business	(+)	.000	1.330	.185	.001	2.240	.026**	.000	1.349	.179	.001	2.925	.004*

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix D.10 CRDI Multiple Regression Analysis (Country = Effect GFC)

		2007			2008			2009			Pooled year		
Adjusted R^2		.004			-.018			-.005			.008		
Durbin Watson		1.714			1.803			1.683			1.737		
F statistic		1.088			.566			.878			1.631		
Significance		.373			.805			.536			.113		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.419	2.563	.011	.428	2.626	.009	.285	1.648	.101	.360	3.783	.000
Country (Effect GFC)	(+)	.037	.880	.380	.017	.388	.698	-.012	-.272	.786	.018	.726	.468
Size	(+)	.002	.101	.919	.018	1.086	.279	.028	1.709	.089***	.017	1.826	.068***
Managerial Ownership	(-)	-.096	-.836	.404	-.078	-.637	.525	.001	.012	.991	-.062	-.898	.369
Board Independence	(+)	.098	.963	.337	-.119	-1.098	.274	-.071	-.644	.520	-.024	-.401	.688
Leverage	(+)	.041	.512	.609	-.021	-.306	.760	.004	.053	.957	.001	.022	.983
Profitability	(+)	.156	1.644	.102	.050	.787	.432	.180	1.725	.086***	.095	2.083	.038**
Auditor	(+)	-.029	-.619	.536	-.028	-.582	.561	.029	.563	.574	-.007	-.261	.795
Age of Business	(+)	-.001	-.840	.402	-.001	-.700	.485	-.001	-.772	.441	-.001	-1.130	.259

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix D.11 BRDI Multiple Regression Analysis (Country = Ex-Colonial, Legal System, Board System)

		2007			2008			2009			Pooled year		
Adjusted R^2		.184			.141			.133			.183		
Durbin Watson		1.545			1.844			1.657			1.655		
F statistic		6.594			5.074			4.814			17.827		
Significance		.000			.000			.000			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.458	4.851	.000	.354	3.706	.000	.466	5.078	.000	.603	17.782	.000
Country (Ex-Colonial, Legal System, Board System)	(+)	-.137	-4.505	.000*	-.077	-2.423	.016**	-.099	-3.233	.001*	-.085	-4.810	.000*
Size	(+)	.022	2.291	.023**	.028	2.981	.003*	.029	3.263	.001*	.0000002	6.344	.000*
Managerial Ownership	(-)	-.151	-2.180	.030**	-.168	-2.260	.025**	-.190	-2.739	.007*	-.153	-3.780	.000*
Board Independence	(+)	.070	1.187	.237	.116	1.838	.068***	-.045	-.763	.447	.059	1.750	.081***
Leverage	(+)	-.027	-.575	.566	-.038	-.935	.351	-.037	-.971	.333	-.038	-1.639	.102
Profitability	(+)	.022	.390	.697	.005	.134	.893	.085	1.491	.138	.039	1.539	.124
Auditor	(+)	-.023	-.837	.404	-.026	-.894	.372	-.018	-.639	.524	-.032	-2.068	.039**
Age of Business	(+)	.001	1.260	.209	.000	.422	.673	-.000006	-.144	.886	.000004	.143	.886

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix D.12 SRDI Multiple Regression Analysis (Country = Ex-Colonial, Legal System, Board System)

		2007			2008			2009			Pooled year		
Adjusted R^2		.115			.128			.063			.119		
Durbin Watson		1.744			1.841			1.873			1.765		
F statistic		4.230			4.640			2.684			11.153		
Significance		.000			.000			.008			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.119	1.747	.082	.029	.389	.698	.049	.646	.519	.081	2.985	.003
Country (Ex-Colonial, Legal System, Board System)	(+)	.051	2.328	.021**	.030	1.203	.230	.046	1.816	.071***	.051	3.593	.000*
Size	(+)	-.011	-1.482	.140	.013	1.739	.084***	.009	1.143	.254	.0000001	3.232	.001*
Managerial Ownership	(-)	-.121	-2.423	.016**	-.135	-2.309	.022**	-.032	-.556	.579	-.086	-2.678	.008*
Board Independence	(+)	.092	2.149	.033**	.136	2.736	.007*	.075	1.526	.129	.104	3.869	.000*
Leverage	(+)	.021	.602	.548	.001	.023	.981	.018	.548	.584	.005	.253	.800
Profitability	(+)	.107	2.664	.008*	.083	2.844	.005*	.083	1.750	.082***	.079	3.917	.000*
Auditor	(+)	.001	.042	.967	-.009	-.396	.692	-.010	-.406	.685	-.006	-.462	.644
Age of Business	(+)	.000004	.104	.917	.000	-1.072	.285	-.000007	-.183	.855	.000	-1.267	.206

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix D.13 ORDI Multiple Regression Analysis (Country = Ex-Colonial, Legal System, Board System)

		2007			2008			2009			Pooled year		
Adjusted R^2		.208			.221			.175			.213		
Durbin Watson		1.382			1.394			1.370			1.370		
F statistic		7.552			8.049			6.289			21.270		
Significance		.000			.000			.000			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.976	7.747	.000	.811	6.764	.000	.780	6.036	.000	.801	17.610	.000
Country (Ex-Colonial, Legal System, Board System)	(+)	-.256	-6.304	.000*	-.277	-6.978	.000*	-.250	-5.816	.000*	-.265	-11.187	.000*
Size	(+)	-.023	-1.790	.075***	-.001	-.079	.937	.000	.017	.987	-.0000001	-1.928	.054***
Managerial Ownership	(-)	-.088	-.960	.338	-.093	-.995	.321	.041	.417	.677	-.057	-1.048	.295
Board Independence	(+)	.090	1.138	.257	.028	.353	.725	.008	.094	.925	.042	.922	.357
Leverage	(+)	-.011	-.166	.868	-.041	-.816	.415	-.058	-1.071	.285	-.031	-.979	.328
Profitability	(+)	.085	1.155	.249	.113	2.435	.016**	.217	2.708	.007*	.115	3.370	.001*
Auditor	(+)	-.025	-.680	.497	.038	1.036	.301	.031	.786	.433	.014	.675	.500
Age of Business	(+)	.000	-.231	.817	.000	-.211	.833	.000	-.636	.526	-.000009	-.245	.807

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix D.14 MRDI Multiple Regression Analysis (Country = Ex-Colonial, Legal System, Board System)

		2007			2008			2009			Pooled year		
Adjusted R^2		.162			.083			.078			.097		
Durbin Watson		2.379			1.912			1.524			1.772		
F statistic		5.792			3.251			3.102			9.017		
Significance		.000			.002			.003			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		-.005	-.107	.915	.188	2.910	.004	.171	2.665	.008	.115	5.168	.000
Country (Ex-Colonial, Legal System, Board System)	(+)	.030	1.843	.067***	-.040	-1.871	.063***	-.006	-.283	.778	.001	.072	.943
Size	(+)	.015	2.877	.004*	-.005	-.745	.457	-.008	-1.318	.189	.0000001	2.544	.011**
Managerial Ownership	(-)	-.004	-.110	.913	-.014	-.283	.778	.018	.378	.706	.003	.117	.907
Board Independence	(+)	.033	1.043	.298	.076	1.775	.078***	.069	1.686	.093***	.054	2.431	.015**
Leverage	(+)	.029	1.164	.246	.055	2.008	.046**	.037	1.391	.166	.045	2.924	.004*
Profitability	(+)	.036	1.235	.218	.077	3.080	.002*	.144	3.626	.000*	.077	4.610	.000*
Auditor	(+)	-.016	-1.134	.258	.010	.519	.605	.024	1.231	.220	.005	.445	.656
Age of Business	(+)	.000	1.244	.215	.001	2.154	.032**	.000	1.105	.271	.000	1.860	.063***

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix D.15 CRDI Multiple Regression Analysis (Country = Ex-Colonial, Legal System, Board System)

		2007			2008			2009			Pooled year		
Adjusted R^2		.000			-.017			.004			.006		
Durbin Watson		1.706			1.807			1.688			1.757		
F statistic		.999			.580			1.092			1.432		
Significance		438			.793			.370			.180		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.472	2.887	.004	.422	2.584	.011	.221	1.300	.195	.478	7.909	.000
Country (Ex-Colonial, Legal System, Board System)	(+)	-.016	-.296	.768	.028	.515	.607	.074	1.313	.191	.037	1.173	.241
Size	(+)	.001	.048	.962	.018	1.091	.277	.028	1.698	.091***	.0000001	1.100	.272
Managerial Ownership	(-)	-.098	-.818	.415	-.053	-.418	.677	.038	.295	.769	-.036	-.495	.620
Board Independence	(+)	.103	1.013	.312	-.114	-1.057	.292	-.071	-.648	.518	-.007	-.119	.905
Leverage	(+)	.049	.595	.553	-.025	-.371	.711	-.004	-.056	.955	-.002	-.058	.954
Profitability	(+)	.173	1.803	.073***	.048	.754	.452	.139	1.323	.187	.106	2.354	.019**
Auditor	(+)	-.036	-.758	.449	-.042	-.856	.393	.008	.156	.876	-.031	-1.102	.271
Age of Business	(+)	-.001	-1.005	.316	-.001	-.873	.384	-.001	-.943	.347	-.001	-1.413	.158

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix D.16 BRDI Multiple Regression Analysis (Size = LogRevenue)

		2007			2008			2009			Pooled year		
Adjusted R^2		.162			.154			.184			.175		
Durbin Watson		1.575			1.786			1.752			1.664		
F statistic		5.667			5.418			6.499			16.488		
Significance		.000			.000			.000			.000		
n		194			195			196			585		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		-.112	-.740	.460	-.055	-.375	.708	-.183	-1.193	.234	-.090	-1.065	.287
Country	(+)	.018	1.512	.132	.000	-.015	.988	.013	1.171	.243	.010	1.539	.124
Size (LogRevenue)	(+)	.070	4.093	.000*	.068	4.297	.000*	.088	5.668	.000*	.071	8.046	.000*
Managerial Ownership	(-)	-.052	-.733	.464	-.065	-.866	.387	-.085	-1.243	.215	-.070	-1.720	.086***
Board Independence	(+)	.114	1.836	.068***	.135	2.085	.038**	-.019	-.326	.745	.076	2.163	.031**
Leverage	(+)	-.139	-2.461	.015**	-.076	-1.844	.067***	-.068	-1.787	.076***	-.088	-3.585	.000*
Profitability	(+)	-.131	-1.754	.081***	-.042	-1.094	.275	-.152	-2.160	.032**	-.075	-2.505	.013**
Auditor	(+)	-.030	-1.009	.314	-.032	-1.054	.293	-.009	-.327	.744	-.023	-1.339	.181
Age of Business	(+)	.000	.495	.621	.000	-.317	.751	.000	-1.000	.319	.000	-.462	.644

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, some revenue data is missing n 2007 = 194, n 2008 = 195, n 2009 = 196, n pooled = 585

Appendix D.17 SRDI Multiple Regression Analysis (Size = LogRevenue)

		2007			2008			2009			Pooled year		
Adjusted R^2		.087			.122			.069			.106		
Durbin Watson		1.765			1.887			1.909			1.794		
F statistic		3.311			4.356			2.803			9.612		
Significance		.001			.000			.006			.000		
n		194			195			196			585		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.002	.015	.988	-.071	-.610	.543	-.059	-.454	.650	-.060	-.901	.368
Country	(+)	-.009	-1.118	.265	-.006	-.598	.550	-.010	-1.002	.318	-.008	-1.548	.122
Size (LogRevenue)	(+)	.014	1.110	.268	.031	2.515	.013**	.029	2.216	.028**	.027	3.792	.000*
Managerial Ownership	(-)	-.122	-2.410	.017**	-.131	-2.218	.028**	-.025	-.424	.672	-.092	-2.828	.005*
Board Independence	(+)	.070	1.569	.118	.120	2.349	.020**	.081	1.621	.107	.097	3.441	.001*
Leverage	(+)	.004	.097	.923	-.015	-.458	.647	.010	.312	.756	-.006	-.323	.747
Profitability	(+)	.107	1.991	.048**	.066	2.146	.033**	.061	1.021	.309	.065	2.759	.006*
Auditor	(+)	.026	1.211	.227	.003	.115	.909	.007	.269	.788	.013	.958	.339
Age of Business	(+)	-.000008	-.242	.809	.000	-1.293	.198	.000	-.431	.667	.000	-1.098	.273

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, some revenue data is missing n 2007 = 194, n 2008 = 195, n 2009 = 196, n pooled = 585

Appendix D.18 ORDI Multiple Regression Analysis (Size = LogRevenue)

		2007			2008			2009			Pooled year		
Adjusted R^2		.184			.179			.110			.166		
Durbin Watson		1.413			1.287			1.245			1.272		
F statistic		6.435			6.281			4.012			15.527		
Significance		.000			.000			.000			.000		
n		194			195			196			585		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.144	.712	.477	.404	2.117	.036	.466	2.032	.044	.339	2.938	.003
Country	(+)	.091	5.773	.000*	.092	5.913	.000*	.066	3.955	.000*	.083	9.017	.000*
Size (LogRevenue)	(+)	.017	.718	.474	-.020	-.998	.320	-.015	-.643	.521	-.008	-.625	.532
Managerial Ownership	(-)	-.019	-.202	.840	-.051	-.528	.598	.091	.889	.375	.007	.126	.900
Board Independence	(+)	.063	.758	.449	.040	.482	.630	.016	.177	.859	.040	.821	.412
Leverage	(+)	-.144	-1.911	.058***	-.056	-1.040	.300	-.056	-.977	.330	-.061	-1.797	.073***
Profitability	(+)	-.123	-1.234	.219	.102	2.029	.044**	.174	1.649	.101	.070	1.709	.088***
Auditor	(+)	.003	.074	.941	.023	.598	.550	-.010	-.228	.820	.004	.172	.864
Age of Business	(+)	.000	-.171	.865	.000002	.034	.973	.000	-.535	.593	.000	-.497	.619

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, some revenue data is missing n 2007 = 194, n 2008 = 195, n 2009 = 196, n pooled = 585

Appendix D.19 MRDI Multiple Regression Analysis (Size = LogRevenue)

		2007			2008			2009			Pooled year		
Adjusted R^2		.101			.084			.069			.084		
Durbin Watson		2.245			1.960			1.477			1.795		
F statistic		3.705			3.210			2.820			7.727		
Significance		.000			.002			.006			.000		
n		194			195			196			585		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.001	.008	.994	-.097	-.976	.330	-.073	-.663	.508	-.060	-1.105	.270
Country	(+)	-.009	-1.373	.171	.017	2.139	.034**	.010	1.236	.218	.006	1.439	.151
Size (LogRevenue)	(+)	.021	2.334	.021**	.018	1.726	.086***	.015	1.372	.172	.019	3.287	.001*
Managerial Ownership	(-)	-.005	-.123	.902	.004	.086	.931	.027	.545	.587	.006	.228	.820
Board Independence	(+)	.030	.916	.361	.057	1.313	.191	.067	1.583	.115	.048	2.106	.036**
Leverage	(+)	.013	.447	.655	.036	1.300	.195	.031	1.139	.256	.032	1.995	.047**
Profitability	(+)	.023	.591	.555	.050	1.896	.060	.102	2.018	.045**	.049	2.535	.012**
Auditor	(+)	-.011	-.680	.497	.027	1.326	.186	.045	2.187	.030**	.019	1.769	.077***
Age of Business	(+)	.000	1.142	.255	.001	1.701	.091	.000	.782	.435	.000	2.079	.038

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, some revenue data is missing n 2007 = 194, n 2008 = 195, n 2009 = 196, n pooled = 585

Appendix D.20 CRDI Multiple Regression Analysis (Size = LogRevenue)

		2007			2008			2009			Pooled year		
Adjusted R^2		-.021			-.013			-.012			.003		
Durbin Watson		1.735			1.895			1.703			1.774		
F statistic		.506			.680			.721			1.200		
Significance		.851			.709			.673			.296		
n		194			195			196			585		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.322	1.260	.209	.452	1.810	.072	.121	.417	.677	.293	1.988	.047
Country	(+)	.012	.608	.544	.000	.009	.993	-.014	-.663	.508	.000	-.044	.965
Size (LogRevenue)	(+)	.017	.574	.567	.021	.782	.435	.053	1.796	.074***	.030	1.961	.050**
Managerial Ownership	(-)	-.093	-.780	.437	-.081	-.640	.523	.041	.319	.750	-.048	-.673	.501
Board Independence	(+)	.050	.475	.635	-.182	-1.651	.100	-.082	-.733	.465	-.069	-1.119	.264
Leverage	(+)	-.017	-.182	.856	-.057	-.803	.423	-.019	-.260	.795	-.040	-.925	.355
Profitability	(+)	.072	.571	.569	.028	.419	.676	-.011	-.083	.934	.030	.575	.566
Auditor	(+)	-.013	-.265	.791	-.022	-.425	.672	.033	.600	.549	.003	.094	.925
Age of Business	(+)	.000	-.949	.344	.000	-.912	.363	.000	-.920	.359	.000	-1.506	.133

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, some revenue data is missing n 2007 = 194, n 2008 = 195, n 2009 = 196, n pooled = 585

Appendix D.21 BRDI Multiple Regression Analysis (Managerial Ownership ≤ 15% and > 15%)

		2007			2008			2009			Pooled year		
Adjusted R^2		.120			.110			.080			.120		
Durbin Watson		1.453			1.779			1.618			1.613		
F statistic		4.379			4.082			3.160			11.187		
Significance		.000			.000			.002			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.268	2.543	.012	.268	2.571	.011	.342	3.302	.001	.290	4.855	.000
Country	(+)	.023	1.913	.057***	.003	.257	.797	.009	.792	.429	.012	1.748	.081***
Size	(+)	.024	2.395	.018**	.029	3.029	.003*	.029	3.193	.002*	.028	5.017	.000*
Managerial Ownership ≤ 15% and > 15%	(-)	-.055	-1.880	.062***	-.039	-1.300	.195	-.046	-1.555	.122	-.049	-2.947	.003*
Board Independence	(+)	.078	1.268	.206	.123	1.911	.057***	-.041	-.671	.503	.056	1.576	.116
Leverage	(+)	-.072	-1.473	.143	-.049	-1.201	.231	-.049	-1.243	.215	-.053	-2.231	.026**
Profitability	(+)	-.026	-.450	.653	-.005	-.141	.888	.040	.698	.486	-.002	-.093	.926
Auditor	(+)	-.046	-1.580	.116	-.046	-1.534	.127	-.039	-1.330	.185	-.043	-2.547	.011**
Age of Business	(+)	.000	.713	.477	.000006	.117	.907	.000	-.298	.766	.000009	.300	.765

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix D.22 SRDI Multiple Regression Analysis (Managerial Ownership ≤ 15% and > 15%)

		2007			2008			2009			Pooled year		
Adjusted R^2		.077			.102			.057			.087		
Durbin Watson		1.694			1.833			1.868			1.745		
F statistic		3.064			3.820			2.516			8.154		
Significance		.003			.000			.013			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.193	2.568	.011	.053	.652	.515	.121	1.435	.153	.113	2.408	.016
Country	(+)	-.009	-1.080	.282	-.004	-.447	.656	-.009	-.941	.348	-.008	-1.429	.153
Size	(+)	-.011	-1.452	.148	.014	1.795	.074***	.009	1.164	.246	.005	1.146	.252
Managerial Ownership ≤ 15% and > 15%	(-)	-.044	-2.104	.037**	-.038	-1.602	.111	-.031	-1.291	.198	-.037	-2.849	.005*
Board Independence	(+)	.082	1.871	.063***	.133	2.642	.009*	.072	1.470	.143	.104	3.737	.000*
Leverage	(+)	.034	.993	.322	.006	.194	.846	.019	.581	.562	.015	.793	.428
Profitability	(+)	.123	3.053	.003*	.086	2.952	.004*	.107	2.328	.021**	.090	4.337	.000*
Auditor	(+)	.005	.258	.796	-.003	-.149	.882	-.001	-.032	.974	.001	.071	.943
Age of Business	(+)	.000	.390	.697	.000	-.641	.523	-.000008	-.189	.850	-.000003	-.164	.870

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix D.23 ORDI Multiple Regression Analysis (Managerial Ownership ≤ 15% and > 15%)

		2007			2008			2009			Pooled year		
Adjusted R^2		.190			.171			.104			.164		
Durbin Watson		1.414			1.285			1.258			1.287		
F statistic		6.839			6.130			3.873			15.666		
Significance		.000			.000			.000			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.396	2.891	.004	.226	1.697	.091	.342	2.319	.021	.320	4.015	.000
Country	(+)	.090	5.778	.000*	.091	5.781	.000*	.065	3.929	.000*	.082	9.028	.000*
Size	(+)	-.018	-1.381	.169	.000	.029	.977	.000007	.005	.996	-.006	-.843	.399
Managerial Ownership ≤ 15% and > 15%	(-)	-.004	-.107	.915	-.007	-.187	.852	.048	1.145	.254	.006	.277	.782
Board Independence	(+)	.103	1.293	.198	.049	.594	.553	.011	.131	.896	.054	1.138	.255
Leverage	(+)	-.081	-1.278	.203	-.071	-1.381	.169	-.071	-1.258	.210	-.068	-2.128	.034**
Profitability	(+)	-.018	-.246	.806	.079	1.658	.099***	.094	1.164	.246	.053	1.496	.135
Auditor	(+)	-.022	-.598	.551	.036	.956	.340	.004	.100	.920	.007	.311	.756
Age of Business	(+)	.000	.184	.854	.000	-.157	.875	.000	-.711	.478	.000	-.468	.640

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix D.24 MRDI Multiple Regression Analysis (Managerial Ownership ≤ 15% and > 15%)

		2007			2008			2009			Pooled year		
Adjusted R^2		.155			.103			.084			.095		
Durbin Watson		2.355			1.950			1.547			1.788		
F statistic		5.564			3.870			3.278			8.818		
Significance		.000			.000			.002			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.050	.918	.360	.084	1.228	.221	.134	1.918	.057	.095	2.505	.013
Country	(+)	-.006	-.987	.325	.022	2.669	.008*	.010	1.225	.222	.008	1.852	.065***
Size	(+)	.014	2.774	.006*	-.005	-.741	.460	-.008	-1.300	.195	.000009	.029	.977
Managerial Ownership ≤ 15% and > 15%	(-)	-.013	-.884	.378	-.032	-1.611	.109	-.009	-.433	.665	-.018	-1.671	.095***
Board Independence	(+)	.027	.858	.392	.076	1.806	.072***	.067	1.633	.104	.056	2.482	.013**
Leverage	(+)	.036	1.460	.146	.050	1.883	.061***	.037	1.396	.164	.047	3.127	.002*
Profitability	(+)	.048	1.659	.099***	.074	3.021	.003*	.142	3.703	.000*	.080	4.753	.000*
Auditor	(+)	-.013	-.893	.373	.017	.886	.377	.031	1.564	.119	.009	.851	.395
Age of Business	(+)	.000	1.118	.265	.001	1.983	.049**	.000	1.122	.263	.000	2.511	.012**

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix D.25 CRDI Multiple Regression Analysis (Managerial Ownership ≤ 15% and > 15%)

		2007			2008			2009			Pooled year		
Adjusted R^2		.001			-.019			-.003			.008		
Durbin Watson		1.715			1.802			1.686			1.737		
F statistic		1.034			.548			.917			1.566		
Significance		.412			.819			.504			.132		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.404	2.299	.023	.426	2.427	.016	.327	1.753	.081	.368	3.586	.000
Country	(+)	.014	.708	.480	.004	.198	.843	-.013	-.600	.549	.002	.207	.836
Size	(+)	.002	.105	.917	.018	1.102	.272	.028	1.696	.092***	.017	1.829	.068***
Managerial Ownership ≤ 15% and > 15%	(-)	-.040	-.821	.413	-.030	-.597	.551	.000	.004	.997	-.024	-.830	.407
Board Independence	(+)	.096	.941	.348	-.118	-1.093	.276	-.072	-.661	.509	-.023	-.384	.701
Leverage	(+)	.043	.533	.595	-.020	-.297	.767	.002	.027	.978	.001	.015	.988
Profitability	(+)	.164	1.741	.083***	.052	.834	.405	.175	1.709	.089***	.100	2.199	.028**
Auditor	(+)	-.030	-.627	.532	-.030	-.597	.551	.021	.401	.689	-.011	-.369	.712
Age of Business	(+)	-.001	-.875	.383	-.001	-.727	.468	-.001	-.872	.384	-.001	-1.227	.220

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix D.26 BRDI Multiple Regression Analysis (Managerial Ownership ≤ 50% and > 50%)

		2007			2008			2009			Pooled year		
Adjusted R^2		.104			.128			.100			.120		
Durbin Watson		1.519			1.785			1.612			1.621		
F statistic		3.883			4.640			3.757			11.214		
Significance		.000			.000			.000			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.252	2.374	.019	.285	2.744	.007	.352	3.431	.001	.289	4.842	.000
Country	(+)	.018	1.508	.133	.001	.094	.925	.009	.751	.453	.010	1.416	.157
Size	(+)	.025	2.395	.018**	.028	2.926	.004*	.029	3.186	.002*	.027	4.923	.000*
Managerial Ownership ≤ 50% and > 50%	(-)	-.018	-.350	.726	-.116	-2.354	.020**	-.114	-2.587	.010**	-.082	-2.980	.003*
Board Independence	(+)	.093	1.510	.133	.129	2.029	.044**	-.039	-.647	.518	.065	1.833	.067***
Leverage	(+)	-.063	-1.293	.198	-.042	-1.055	.293	-.038	-.962	.337	-.046	-1.933	.054***
Profitability	(+)	-.029	-.512	.609	-.007	-.186	.853	.037	.664	.507	-.004	-.157	.876
Auditor	(+)	-.050	-1.737	.084***	-.053	-1.783	.076***	-.048	-1.657	.099***	-.048	-2.875	.004*
Age of Business	(+)	.001	1.195	.234	.000003	.066	.948	.000	-.405	.686	.000	.609	.543

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix D.27 SRDI Multiple Regression Analysis (Managerial Ownership ≤ 50% and > 50%)

		2007			2008			2009			Pooled year		
Adjusted R^2		.071			.112			.050			.079		
Durbin Watson		1.684			1.840			1.877			1.746		
F statistic		2.911			4.135			2.299			7.433		
Significance		.004			.000			.023			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.188	2.493	.014	.064	.786	.433	.113	1.338	.183	.108	2.303	.022
Country	(+)	-.012	-1.490	.138	-.007	-.733	.465	-.011	-1.214	.226	-.010	-1.898	.058***
Size	(+)	-.011	-1.544	.124	.013	1.688	.093***	.009	1.172	.243	.005	1.116	.265
Managerial Ownership ≤ 50% and > 50%	(-)	-.067	-1.821	.070***	-.085	-2.184	.030**	.011	.294	.769	-.037	-1.687	.092***
Board Independence	(+)	.096	2.194	.029**	.138	2.762	.006*	.079	1.593	.113	.110	3.968	.000*
Leverage	(+)	.042	1.220	.224	.011	.349	.727	.021	.644	.520	.019	1.028	.304
Profitability	(+)	.127	3.115	.002*	.085	2.912	.004*	.104	2.252	.025**	.088	4.216	.000*
Auditor	(+)	.003	.138	.891	-.009	-.397	.691	-.003	-.147	.883	-.003	-.211	.833
Age of Business	(+)	.000	.732	.465	.000	-.607	.544	.000007	.169	.866	.000007	.314	.754

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix D.28 ORDI Multiple Regression Analysis (Managerial Ownership ≤ 50% and > 50%)

		2007			2008			2009			Pooled year		
Adjusted R^2		.216			.196			.100			.178		
Durbin Watson		1.506			1.375			1.300			1.359		
F statistic		7.866			7.078			3.776			17.238		
Significance		.000			.000			.000			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.418	3.108	.002	.251	1.915	.057	.360	2.430	.016	.339	4.292	.000
Country	(+)	.093	6.214	.000*	.093	6.207	.000*	.070	4.256	.000*	.085	9.602	.000*
Size	(+)	-.021	-1.635	.104	-.001	-.122	.903	.000	-.017	.986	-.007	-1.027	.305
Managerial Ownership ≤ 50% and > 50%	(-)	-.165	-2.530	.012**	-.154	-2.465	.015**	-.050	-.797	.426	-.118	-3.233	.001*
Board Independence	(+)	.110	1.408	.161	.054	.665	.507	-.000007	-.001	.999	.054	1.150	.251
Leverage	(+)	-.077	-1.236	.218	-.064	-1.263	.208	-.072	-1.275	.204	-.064	-2.028	.043**
Profitability	(+)	.002	.033	.973	.080	1.701	.090***	.100	1.233	.219	.058	1.652	.099***
Auditor	(+)	-.019	-.506	.614	.031	.837	.404	.007	.171	.864	.006	.275	.784
Age of Business	(+)	-.000007	-.122	.903	.000	-.520	.603	-.001	-1.136	.257	.000	-1.075	.283

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix D.29 MRDI Multiple Regression Analysis (Managerial Ownership ≤ 50% and > 50%)

		2007			2008			2009			Pooled year		
Adjusted R^2		.154			.094			.103			.097		
Durbin Watson		2.376			1.965			1.544			1.806		
F statistic		5.516			3.581			3.853			9.019		
Significance		.000			.001			.000			.000		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.043	.789	.431	.077	1.110	.269	.122	1.769	.079	.085	2.246	.025
Country	(+)	-.008	-1.291	.198	.018	2.249	.026**	.008	.988	.324	.006	1.365	.173
Size	(+)	.015	2.856	.005*	-.004	-.666	.506	-.008	-1.270	.205	.001	.175	.861
Managerial Ownership ≤ 50% and > 50%	(-)	.018	.686	.493	.025	.762	.447	.061	2.058	.041**	.036	2.059	.040**
Board Independence	(+)	.030	.956	.340	.078	1.836	.068***	.072	1.777	.077***	.058	2.614	.009*
Leverage	(+)	.038	1.527	.129	.050	1.866	.064***	.034	1.290	.199	.047	3.145	.002*
Profitability	(+)	.044	1.520	.130	.072	2.918	.004*	.140	3.695	.000*	.077	4.583	.000*
Auditor	(+)	-.015	-1.012	.313	.015	.780	.436	.032	1.659	.099***	.008	.749	.454
Age of Business	(+)	.000	1.487	.139	.001	2.541	.012**	.001	1.628	.105	.001	3.342	.001*

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix D.30 CRDI Multiple Regression Analysis (Managerial Ownership ≤ 50% and > 50%)

		2007			2008			2009			Pooled year		
Adjusted R^2		.004			-.020			-.001			.006		
Durbin Watson		1.709			1.796			1.677			1.733		
F statistic		1.093			.506			.967			1.478		
Significance		.370			.851			.463			.162		
n		200			200			200			600		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.403	2.302	.022	.420	2.386	.018	.319	1.710	.089	.361	3.521	.000
Country	(+)	.012	.606	.545	.001	.028	.977	-.014	-.663	.508	.000	.034	.973
Size	(+)	.001	.032	.975	.018	1.119	.264	.028	1.709	.089***	.017	1.847	.065***
Managerial Ownership ≤ 50% and > 50%	(-)	-.090	-1.060	.291	.015	.184	.854	.049	.619	.537	.002	.040	.968
Board Independence	(+)	.110	1.082	.281	-.116	-1.076	.283	-.070	-.640	.523	-.019	-.319	.750
Leverage	(+)	.051	.632	.528	-.020	-.292	.770	-.001	-.018	.986	.003	.062	.951
Profitability	(+)	.171	1.808	.072***	.050	.801	.424	.174	1.704	.090***	.098	2.148	.032**
Auditor	(+)	-.032	-.661	.509	-.032	-.641	.522	.023	.438	.662	-.013	-.442	.659
Age of Business	(+)	-.001	-.818	.415	.000	-.558	.577	-.001	-.770	.442	-.001	-1.027	.305

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix D.31 BRDI Multiple Regression Analysis (Board Meeting)

		2007			2008			2009			Pooled year		
Adjusted R^2		.191			.154			.168			.185		
Durbin Watson		1.601			1.951			1.888			1.779		
F statistic		6.354			5.120			5.549			16.487		
Significance		.000			.000			.000			.000		
n		182			182			181			545		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.191	1.929	.055	.242	2.329	.021	.293	3.029	.003	.245	4.303	.000
Country	(+)	.020	1.697	.091***	.001	.046	.963	.000	-.031	.975	.007	.950	.342
Company Size	(+)	.032	3.298	.001*	.036	3.840	.000*	.032	3.795	.000*	.033	6.312	.000*
Managerial Ownership	(-)	-.121	-1.903	.059***	-.135	-1.899	.059***	-.183	-2.903	.004*	-.148	-3.926	.000*
Board Meeting	(+)	.009	3.262	.001*	.006	1.971	.050**	.005	2.244	.026**	.006	4.255	.000*
Leverage	(+)	-.082	-1.629	.105	-.059	-1.284	.201	-.074	-1.764	.080***	-.066	-2.584	.010*
Profitability	(+)	-.022	-.410	.682	.028	.717	.474	.090	1.704	.090***	.030	1.180	.239
Auditor	(+)	-.036	-1.328	.186	-.033	-1.153	.251	-.008	-.283	.778	-.026	-1.627	.104
Age of Business	(+)	.000	.826	.410	.000	.208	.836	.000	-.436	.664	.000	.487	.627

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, some board meeting data is missing n 2007 = 182, n 2008 = 182, n 2009 = 181, n pooled = 545

Appendix D.32 SRDI Multiple Regression Analysis (Board Meeting)

		2007			2008			2009			Pooled year		
Adjusted R^2		.089			.119			.074			.095		
Durbin Watson		1.714			1.712			1.768			1.660		
F statistic		3.203			4.066			2.808			8.146		
Significance		.002			.000			.006			.000		
n		182			182			181			545		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.235	2.949	.004	.120	1.358	.176	.141	1.580	.116	.152	3.041	.002
Country	(+)	-.014	-1.487	.139	-.009	-.830	.408	-.016	-1.463	.145	-.012	-2.007	.045**
Company Size	(+)	-.006	-.728	.467	.022	2.801	.006*	.012	1.541	.125	.011	2.339	.020**
Managerial Ownership	(-)	-.151	-2.961	.004*	-.160	-2.660	.009*	-.052	-.896	.372	-.121	-3.652	.000*
Board Meeting	(+)	-.003	-1.170	.244	-.003	-1.021	.309	.000005	.024	.981	-.001	-.968	.334
Leverage	(+)	.031	.767	.444	-.016	-.399	.691	.033	.848	.398	.013	.589	.556
Profitability	(+)	.111	2.547	.012**	.068	2.069	.040**	.103	2.125	.035**	.078	3.497	.001*
Auditor	(+)	.001	.061	.951	-.020	-.830	.408	-.009	-.357	.721	-.009	-.677	.499
Age of Business	(+)	.000	.582	.561	.000	-.655	.513	.000	.721	.472	.000	.443	.658

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, some board meeting data is missing n 2007 = 182, n 2008 = 182, n 2009 = 181, n pooled = 545

Appendix D.33 ORDI Multiple Regression Analysis (Board Meeting)

		2007			2008			2009			Pooled year		
Adjusted R^2		.131			.125			.053			.115		
Durbin Watson		1.424			1.293			1.267			1.289		
F statistic		4.398			4.232			2.270			9.860		
Significance		.000			.000			.025			.000		
n		182			182			181			545		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.441	2.960	.004	.235	1.620	.107	.352	2.208	.029	.350	4.064	.000
Country	(+)	.084	4.603	.000*	.088	4.960	.000*	.058	3.007	.003*	.076	7.230	.000*
Company Size	(+)	-.012	-.822	.412	.003	.233	.816	.002	.172	.863	-.003	-.377	.706
Managerial Ownership	(-)	-.056	-.590	.556	-.053	-.539	.590	.080	.764	.446	-.014	-.244	.807
Board Meeting	(+)	-.001	-.255	.799	.002	.380	.704	.001	.283	.777	.000	.140	.888
Leverage	(+)	-.078	-1.021	.308	-.069	-1.067	.287	-.071	-1.028	.305	-.061	-1.561	.119
Profitability	(+)	-.034	-.420	.675	.086	1.580	.116	.108	1.240	.217	.053	1.366	.173
Auditor	(+)	-.031	-.761	.447	.034	.842	.401	.004	.101	.919	.000	-.008	.994
Age of Business	(+)	.000005	.063	.950	.000	-.226	.822	.000	-.631	.529	.000	-.503	.615

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, some board meeting data is missing n 2007 = 182, n 2008 = 182, n 2009 = 181, n pooled = 545

Appendix D.34 MRDI Multiple Regression Analysis (Board Meeting)

		2007			2008			2009			Pooled year		
Adjusted R^2		.134			.054			.070			.066		
Durbin Watson		2.162			1.805			1.436			1.643		
F statistic		4.492			2.291			2.698			5.795		
Significance		.000			.023			.008			.000		
n		182			182			181			545		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.052	.893	.373	.090	1.188	.236	.093	1.249	.213	.081	1.978	.048
Country	(+)	-.007	-.973	.332	.021	2.208	.029**	.017	1.850	.066***	.011	2.163	.031**
Company Size	(+)	.017	3.040	.003*	-.001	-.191	.849	-.005	-.828	.409	.003	.701	.483
Managerial Ownership	(-)	-.018	-.495	.621	-.023	-.437	.662	.005	.101	.920	-.017	-.624	.533
Board Meeting	(+)	.000	-.296	.768	.001	.406	.685	.003	1.846	.067***	.002	1.430	.153
Leverage	(+)	.024	.808	.420	.038	1.133	.259	.027	.824	.411	.038	2.075	.038**
Profitability	(+)	.042	1.326	.186	.076	2.683	.008*	.163	3.996	.000*	.085	4.639	.000*
Auditor	(+)	-.015	-.965	.336	.015	.700	.485	.037	1.783	.076***	.010	.866	.387
Age of Business	(+)	.000	.931	.353	.001	1.724	.086***	.000	1.010	.314	.000	2.165	.031**

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, some board meeting data is missing n 2007 = 182, n 2008 = 182, n 2009 = 181, n pooled = 545

Appendix D.35 CRDI Multiple Regression Analysis (Board Meeting)

		2007			2008			2009			Pooled year		
Adjusted R^2		.003			-.026			.010			.013		
Durbin Watson		1.604			1.888			1.747			1.749		
F statistic		1.062			.431			1.233			1.900		
Significance		.392			.901			.282			.058		
n		182			182			181			545		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.416	2.295	.023	.445	2.501	.013	.335	1.790	.075	.388	3.744	.000
Country	(+)	.014	.649	.517	.006	.265	.791	-.013	-.590	.556	.002	.191	.848
Company Size	(+)	-.005	-.310	.757	.001	.072	.943	.012	.761	.448	.005	.518	.605
Managerial Ownership	(-)	-.072	-.620	.536	-.045	-.374	.709	.060	.487	.627	-.019	-.278	.781
Board Meeting	(+)	.004	.688	.492	.000	-.063	.950	-.003	-.628	.531	.000	-.090	.929
Leverage	(+)	.152	1.639	.103	.076	.964	.337	.110	1.356	.177	.101	2.162	.031**
Profitability	(+)	.171	1.733	.085***	.040	.601	.549	.171	1.675	.096***	.092	1.974	.049**
Auditor	(+)	-.037	-.748	.456	-.039	-.779	.437	.032	.606	.545	-.016	-.544	.586
Age of Business	(+)	.000007	.008	.993	.000	.117	.907	.000	.500	.618	.000	.575	.566

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, some board meeting data is missing n 2007 = 182, n 2008 = 182, n 2009 = 181, n pooled = 545

From Appendices D.1 – D.35 the results comparison between additional analysis in the main and sensitivity analysis measurements for the independent variables effect on five major sub RDI are:

- For the main analysis, the 'country' variable is statistically significant for 'operating risk' (ORDI) 2007, 2008, 2009, and pooled data, and also significant for 'market risk' (MRDI) in 2008.
- Country in the sensitivity analysis re-measured by country GDP is significant in 'business risk' (BRDI) for all years, 'strategy risk' (SRDI) for all years, and 'operating risk' (ORDI) only in pooled data. Country in the sensitivity analysis re-measured by categorized based on the economic effect of Global Financial Crisis (GFC) is significant in 'operating risk' (ORDI) for all years, and 'market risk' (MRDI) in 2008 and pooled data. Country in the sensitivity analysis re-measured by categorized based on the ex-colonial, legal system, and board system is significant in 'business risk' (BRDI) for all years, 'strategy risk' (SRDI) in three of the four regressions (except 2008), and 'operating risk' (ORDI) for all years.
- For the main analysis, size is a consistent positive predictor for 'business risk' (BRDI) for all years, 'market risk' (MRDI) for 2007 with positive coefficient (see Table 7.1).
- For sensitivity analysis, Size is a steady positive predictor for "business risk' (BRDI) for all years, 'strategy risk' (SRDI) for 2008, 2009, and pooled year, 'market risk' (MRDI) for 2007 and pooled year and 'credit risk' (CRDI) in pooled year, with positive coefficient.
- Managerial ownership is negatively significant for 'strategy risk' (SRDI) in 2007, 2008 and pooled data and also statistically significant for 'business risk' (ORDI) in the pooled data set in the main analysis.
- Managerial ownership in the sensitivity analysis re-measured by categorized based on the companies which have ≤ 15% and > 15% managerial ownership is negatively significant in 'business risk' (BRDI) in pooled data, and negatively significant in 'strategy risk' (SRDI) in 2007 and pooled data. Managerial ownership re-measured by categorized companies which have ≤ 50 % and > 50% managerial ownership is negatively significant in 'business risk' (BRDI) in three of the four regressions (except 2007), negatively significant in 'strategy risk' (SRDI) in 2008, negatively significant in 'operating risk' (ORDI) in three of the four regressions (except 2009), and positively significant in 'market risk' (MRDI) in 2009 and pooled data.
- For the main analysis, board independence is positively significant for 'strategy risk' (SRDI) in 2007,2008 and pooled year; and 'market risk' (MRDI) in pooled year data (see Table 7.1).
- For the sensitivity analysis, board meeting is positively significant for 'business risk' (BRDI) in 2007,2008, 2009 and pooled year .

APPENDIX E: Sensitivity Analysis in the Additional Change Regression

Appendix E provides the sensitivity analysis in the additional change analysis regressions in the different measurement of independent and control variables.

The first sensitivity analysis (Appendices E.1 – E.3) for additional change analysis regression tests the association between the change in the risk disclosure and the change of predictor variables between years. In the main analysis country is measure by categorized 1 if Indonesia, 2 if Australia, 3 if Malaysia, and 4 if Singapore manufacturing listed companies. For sensitivity analysis country is measured with the country GDP. In main the analysis, size is measure by log total assets. For sensitivity analysis, size is replaced with a different measurement of size using log total revenue. This sensitivity analysis also measures board meeting as substitute measurement of board independent for proxies of corporate governance. The other sensitivity analysis for independent variables (country re-measured by categorized based on economic effect of Global Financial Crisis (GFC) and categorized British colonial with its common law and one-tier board system or ex Dutch colonial with its civil law approach and two-tiers board system and managerial ownership re-measured by categories based on the companies which have ≤ 15% and > 15% also ≤ 50% and > 50% managerial ownership are not analysis in this model because there is only negligible change over time.

The second sensitivity analysis (Appendices E.4 – D.18) tests the association between the change in the five sub categories of risk disclosure (business risk, strategy risk, operational risk, market risk, credit risk) and the change of predictor variables between years with different measurements of independent and control variables.

Appendix E.1 Change RDI Multiple Regression Analysis (Country = Δ GDP)

		Δ2007-2009			Δ2007-2008			Δ2008-2009		
Adjusted R^2		-.014			.000			-.009		
Durbin Watson		2.081			2.025			1.899		
F statistic		.544			.988			.711		
Significance		.774			.435			.641		
n		200			200			200		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.042	6.610	.000	.025	3.594	.000	.020	2.431	.016
Country (Δ GDP)	(+)	.0000002	.366	.715	-.00000001	-.075	.940	.0000003	1.242	.216
ΔSize	(+)	-.013	-.411	.682	.000	.014	.989	-.005	-.097	.922
ΔManagerial Ownership	(-)	-.031	-.497	.620	-.116	-2.152	.033**	.043	.582	.561
ΔBoard Independence	(+)	-.002	-.055	.956	.021	.456	.649	-.004	-.097	.923
ΔLeverage	(+)	.040	.869	.386	.032	.623	.534	-.046	-.847	.398
ΔProfitability	(+)	-.031	-1.310	.192	-.014	-.806	.421	-.028	-1.268	.206

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix E.2 Change RDI Multiple Regression Analysis (∆Size LogRevenue)

		∆2007-2009			∆2007-2008			∆2008-2009		
Adjusted R^2		-.004			.005			-.007		
Durbin Watson		2.014			2.004			1.894		
F statistic		.857			1.176			.765		
Significance		.527			.321			.598		
n		194			194			195		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.054	3.613	.000	.025	1.842	.067	.018	1.343	.181
Country	(+)	-.006	-1.101	.272	.000	-.130	.896	-.002	-.511	.610
∆Size (LogRevenue)	(+)	.005	.243	.808	.019	.811	.419	.031	1.298	.196
∆Managerial Ownership	(-)	-.035	-.549	.584	-.117	-2.141	.034**	.052	.691	.491
∆Board Independence	(+)	-.004	-.108	.914	.019	.393	.695	-.001	-.034	.973
∆Leverage	(+)	.043	.925	.356	.026	.490	.625	-.038	-.713	.477
∆Profitability	(+)	-.049	-1.707	.090***	-.015	-.908	.365	.006	.215	.830

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, some revenue data is missing n 2007-2009 = 194, n 2007-2008 = 194, n 2008-2009 = 195

Appendix E.3 Change RDI Multiple Regression Analysis (∆Board Meeting)

		∆2007-2009			∆2007-2008			∆2008-2009		
Adjusted R^2		-.004			.003			.002		
Durbin Watson		2.096			2.020			1.925		
F statistic		.871			1.091			1.052		
Significance		.517			.370			.394		
n		182			182			183		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.063	3.814	.000	.020	1.344	.181	.034	2.256	.025
Country	(+)	-.008	-1.466	.145	.001	.157	.875	-.007	-1.426	.156
∆Company Size	(+)	-.011	-.325	.745	.005	.156	.877	.016	.324	.747
∆Managerial Ownership	(-)	-.011	-.180	.857	-.119	-2.189	.030**	.045	.586	.559
∆Board Meeting	(+)	.001	.773	.441	.000	.122	.903	-.002	-1.162	.247
∆Leverage	(+)	.045	.905	.367	.072	1.138	.257	-.047	-.823	.412
∆Profitability	(+)	-.027	-1.063	.289	-.014	-.746	.457	-.035	-1.414	.159

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, some board meeting data is missing n 2007-2009 = 182, n 2007-2008 = 182, n 2008-2009 = 183

The result for sensitivity analysis from Appendices E.1 – E.3 compared with the main analysis reveals that there is no significant difference in the significance of change in country, size and change of corporate governance related to RDI. Both the main and sensitivity analysis shows that change in country is not significant in all three regressions, size also is not significant in all the three regressions and change in corporate governance is not significant in all the three regressions (see Table 7.7).

Appendix E.4 Change BRDI Multiple Regression Analysis (Country = Δ GDP)

		Δ2007-2009			Δ2007-2008			Δ2008-2009		
Adjusted R^2		-.018			-.009			.026		
Durbin Watson		1.955			1.806			2.087		
F statistic		.403			.700			1.883		
Significance		.876			.650			.086		
n		200			200			200		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.039	4.162	.000	.023	1.931	.055	.030	2.346	.020
Country (Δ GDP)	(+)	-.00000009	-.132	.895	-.0000004	-1.301	.195	.0000003	.689	.491
ΔSize	(+)	.020	.428	.669	.038	.686	.493	-.014	-.191	.849
ΔManagerial Ownership	(-)	-.127	-1.340	.182	-.073	-.787	.432	.104	.930	.353
ΔBoard Independence	(+)	-.020	-.349	.727	.106	1.297	.196	-.007	-.117	.907
ΔLeverage	(+)	-.011	-.160	.873	-.002	-.020	.984	-.097	-1.185	.238
ΔProfitability	(+)	-.016	-.437	.662	-.020	-.698	.486	-.096	-2.872	.005*

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix E.5 Change SRDI Multiple Regression Analysis (Country = Δ GDP)

		Δ2007-2009			Δ2007-2008			Δ2008-2009		
Adjusted R^2		-.012			.004			-.012		
Durbin Watson		2.011			2.177			1.941		
F statistic		.620			1.144			.595		
Significance		.714			.338			.734		
n		200			200			200		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.058	6.496	.000	.042	4.204	.000	.013	1.004	.317
Country (Δ GDP)	(+)	.00000005	.076	.939	.0000002	1.031	.304	.00000009	.244	.808
ΔSize	(+)	-.039	-.900	.369	-.058	-1.235	.218	-.075	-1.034	.302
ΔManagerial Ownership	(-)	-.092	-1.028	.305	-.121	-1.557	.121	-.012	-.106	.915
ΔBoard Independence	(+)	.007	.124	.901	.052	.760	.448	.034	.544	.587
ΔLeverage	(+)	.020	.301	.764	-.078	-1.033	.303	-.054	-.655	.513
ΔProfitability	(+)	-.041	-1.198	.233	.023	.958	.339	.047	1.385	.168

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix E.6 Change ORDI Multiple Regression Analysis (Country = Δ GDP)

		Δ2007-2009			Δ2007-2008			Δ2008-2009		
Adjusted R^2		.004			.017			-.022		
Durbin Watson		2.072			2.077			1.844		
F statistic		1.129			1.577			.290		
Significance		.347			.156			.941		
n		200			200			200		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.022	1.544	.124	.007	.528	.598	.001	.049	.961
Country (Δ GDP)	(+)	.000002	1.934	.055***	.0000004	1.059	.291	.00000009	.167	.867
ΔSize	(+)	.008	.113	.910	.035	.539	.591	.073	.683	.496
ΔManagerial Ownership	(-)	.066	.464	.643	-.072	-.663	.508	.003	.018	.986
ΔBoard Independence	(+)	.026	.301	.764	-.060	-.628	.531	-.059	-.636	.526
ΔLeverage	(+)	.015	.143	.886	.197	1.868	.063***	.018	.147	.883
ΔProfitability	(+)	-.087	-1.605	.110	-.069	-2.003	.047**	-.051	-1.011	.313

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix E.7 Change MRDI Multiple Regression Analysis (Country = Δ GDP)

		Δ2007-2009			Δ2007-2008			Δ2008-2009		
Adjusted R^2		.025			-.002			-.008		
Durbin Watson		1.505			1.925			1.914		
F statistic		1.837			.926			.748		
Significance		.094			.477			.612		
n		200			200			200		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.037	3.976	.000	.026	2.535	.012	.016	1.230	.220
Country (Δ GDP)	(+)	-.0000009	-1.233	.219	.00000004	.158	.875	.0000006	1.658	.099***
ΔSize	(+)	-.058	-1.273	.204	-.015	-.323	.747	-.001	-.015	.988
ΔManagerial Ownership	(-)	.087	.922	.358	-.141	-1.764	.079***	.029	.249	.803
ΔBoard Independence	(+)	-.061	-1.050	.295	-.089	-1.265	.207	-.015	-.220	.826
ΔLeverage	(+)	.172	2.522	.012**	.093	1.204	.230	.030	.342	.733
ΔProfitability	(+)	-.013	-.378	.706	-.009	-.377	.707	.023	.660	.510

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix E.8 Change CRDI Multiple Regression Analysis (Country = Δ GDP)

		Δ2007-2009			Δ2007-2008			Δ2008-2009		
Adjusted R^2		-.008			-.003			-.015		
Durbin Watson		1.930			1.870			1.745		
F statistic		.728			.911			.520		
Significance		.628			.488			.793		
n		200			200			200		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.045	2.339	.020	.0000009	.000	1.000	.052	2.043	.042
Country (Δ GDP)	(+)	.000001	.793	.429	.0000001	.173	.863	.0000006	.874	.383
ΔSize	(+)	.015	.157	.875	-.020	-.201	.841	.111	.761	.447
ΔManagerial Ownership	(-)	.106	.547	.585	-.382	-2.291	.023**	.075	.328	.743
ΔBoard Independence	(+)	.221	1.849	.066***	.014	.097	.923	.041	.324	.746
ΔLeverage	(+)	.017	.122	.903	.035	.215	.830	-.121	-.729	.467
ΔProfitability	(+)	-.006	-.077	.939	.006	.114	.909	-.026	-.379	.705

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix E.9 Change BRDI Multiple Regression Analysis (∆Size =∆ LogRevenue)

		∆2007-2009			∆2007-2008			∆2008-2009		
Adjusted R^2		-.004			.002			.057		
Durbin Watson		1.930			1.818			2.017		
F statistic		.884			1.063			2.960		
Significance		.508			.386			.009		
n		194			194			195		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.064	2.859	.005	.055	2.363	.019	-.008	-.403	.687
Country	(+)	-.010	-1.295	.197	-.016	-1.882	.061***	.012	1.643	.102
∆Size (∆LogRevenue)	(+)	.011	.369	.712	.002	.058	.954	.102	2.850	.005*
∆Managerial Ownership	(-)	-.139	-1.431	.154	-.066	-.691	.490	.126	1.133	.259
∆Board Independence	(+)	-.023	-.388	.698	.107	1.302	.195	-.009	-.140	.889
∆Leverage	(+)	-.000004	.000	1.000	-.030	-.335	.738	-.072	-.897	.371
∆Profitability	(+)	-.050	-1.147	.253	-.022	-.750	.454	-.015	-.359	.720

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, some revenue data is missing n 2007-2009 = 194, n 2007-2008 = 194, n 2008-2009 = 195

Appendix E.10 Change SRDI Multiple Regression Analysis (∆Size =∆ LogRevenue)

		∆2007-2009			∆2007-2008			∆2008-2009		
Adjusted R^2		-.022			.005			-.008		
Durbin Watson		2.050			2.220			1.958		
F statistic		.304			1.145			.750		
Significance		.935			.338			.610		
n		194			194			195		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.052	2.391	.018	.025	1.257	.210	.025	1.202	.231
Country	(+)	.002	.255	.799	.009	1.209	.228	-.007	-.930	.354
∆Size (∆LogRevenue)	(+)	.005	.192	.848	.006	.187	.852	-.013	-.363	.717
∆Managerial Ownership	(-)	-.101	-1.086	.279	-.130	-1.597	.112	-.005	-.044	.965
∆Board Independence	(+)	.009	.159	.873	.065	.929	.354	.029	.456	.649
∆Leverage	(+)	-.004	-.053	.958	-.078	-1.004	.317	-.087	-1.056	.292
∆Profitability	(+)	-.029	-.707	.481	.022	.872	.384	.046	1.078	.282

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, some revenue data is missing n 2007-2009 = 194, n 2007-2008 = 194, n 2008-2009 = 195

Appendix E.11 Change ORDI Multiple Regression Analysis (∆Size =∆ LogRevenue)

		∆2007-2009			∆2007-2008			∆2008-2009		
Adjusted R^2		-.006			.023			-.018		
Durbin Watson		1.973			2.000			1.887		
F statistic		.807			1.754			.436		
Significance		.566			.111			.854		
n		194			194			195		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.069	2.031	.044	.020	.751	.453	.037	1.224	.223
Country	(+)	-.020	-1.639	.103	-.003	-.357	.721	-.015	-1.400	.163
∆Size (∆LogRevenue)	(+)	.005	.117	.907	.055	1.195	.234	-.014	-.260	.795
∆Managerial Ownership	(-)	.072	.491	.624	-.077	-.699	.486	-.022	-.133	.895
∆Board Independence	(+)	-.001	-.014	.989	-.095	-.997	.320	-.055	-.588	.557
∆Leverage	(+)	.036	.342	.732	.204	1.924	.056***	.034	.285	.776
∆Profitability	(+)	-.088	-1.353	.178	-.068	-1.989	.048**	-.039	-.615	.539

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, some revenue data is missing n 2007-2009 = 194, n 2007-2008 = 194, n 2008-2009 = 195

Appendix E.12 Change MRDI Multiple Regression Analysis (∆Size =∆ LogRevenue)

		∆2007-2009			∆2007-2008			∆2008-2009		
Adjusted R^2		.016			.044			-.018		
Durbin Watson		1.480			2.049			1.925		
F statistic		1.532			2.492			.433		
Significance		.170			.024			.856		
n		194			194			195		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.009	.390	.697	-.026	-1.332	.184	.018	.856	.393
Country	(+)	.010	1.213	.227	.020	2.827	.005*	-.007	-.918	.360
∆Size (∆LogRevenue)	(+)	-.012	-.424	.672	.045	1.324	.187	.014	.364	.716
∆Managerial Ownership	(-)	.101	1.024	.307	-.142	-1.755	.081***	.042	.346	.729
∆Board Independence	(+)	-.052	-.863	.389	-.093	-1.322	.188	-.004	-.053	.958
∆Leverage	(+)	.165	2.343	.020**	.099	1.276	.204	.038	.443	.659
∆Profitability	(+)	-.021	-.486	.628	-.003	-.126	.900	.045	.999	.319

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, some revenue data is missing n 2007-2009 = 194, n 2007-2008 = 194, n 2008-2009 = 195

Appendix E.13 Change CRDI Multiple Regression Analysis (∆Size =∆ LogRevenue)

		∆2007-2009			∆2007-2008			∆2008-2009		
Adjusted R^2		.018			.005			-.017		
Durbin Watson		1.940			1.882			1.718		
F statistic		1.584			1.149			.473		
Significance		.154			.336			.827		
n		194			194			195		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.117	2.550	.012	.027	.644	.520	.094	2.284	.024
Country	(+)	-.030	-1.826	.070***	-.011	-.746	.457	-.021	-1.421	.157
∆Size (∆LogRevenue)	(+)	.024	.408	.684	-.022	-.304	.761	-.040	-.540	.590
∆Managerial Ownership	(-)	.076	.385	.701	-.416	-2.428	.016**	.084	.362	.718
∆Board Independence	(+)	.230	1.917	.057***	.015	.099	.921	.061	.476	.635
∆Leverage	(+)	.069	.484	.629	.058	.351	.726	-.094	-.564	.574
∆Profitability	(+)	-.120	-1.352	.178	-.029	-.549	.583	-.038	-.433	.666

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, some revenue data is missing n 2007-2009 = 194, n 2007-2008 = 194, n 2008-2009 = 195

Appendix E.14 Change BRDI Multiple Regression Analysis (∆Board Meeting)

		∆2007-2009			∆2007-2008			∆2008-2009		
Adjusted R^2		-.005			-.010			.032		
Durbin Watson		2.096			1.886			2.039		
F statistic		.856			.696			1.990		
Significance		.529			.653			.069		
n		182			182			183		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.082	3.317	.001	.046	1.720	.087	.026	1.152	.251
Country	(+)	-.015	-1.816	.071***	-.013	-1.440	.152	.001	.069	.945
∆Company Size	(+)	.008	.167	.867	.016	.293	.770	.042	.567	.572
∆Managerial Ownership	(-)	-.100	-1.061	.290	-.064	-.675	.501	.113	.987	.325
∆Board Meeting	(+)	.001	.511	.610	.003	.833	.406	-.003	-1.100	.273
∆Leverage	(+)	.012	.163	.871	.060	.542	.589	-.098	-1.144	.254
∆Profitability	(+)	-.001	-.029	.977	-.015	-.460	.646	-.115	-3.105	.002*

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, some board meeting data is missing n 2007-2009 = 182, n 2007-2008 = 182, n 2008-2009 = 183

Appendix E.15 Change SRDI Multiple Regression Analysis (∆Board Meeting)

		∆2007-2009			∆2007-2008			∆2008-2009		
Adjusted R^2		-.017			.000			.001		
Durbin Watson		1.934			2.193			1.970		
F statistic		.486			.995			1.029		
Significance		.818			.431			.408		
n		182			182			183		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.066	2.792	.006	.025	1.139	.256	.048	2.081	.039
Country	(+)	-.002	-.307	.759	.009	1.191	.235	-.013	-1.691	.093***
∆Company Size	(+)	-.030	-.649	.517	-.042	-.896	.372	-.095	-1.268	.207
∆Managerial Ownership	(-)	-.073	-.811	.418	-.140	-1.763	.080***	-.009	-.074	.941
∆Board Meeting	(+)	.001	.556	.579	-.002	-.544	.587	.000	-.405	.686
∆Leverage	(+)	.020	.282	.778	-.050	-.545	.586	-.063	-.726	.469
∆Profitability	(+)	-.037	-1.030	.304	.018	.662	.509	.052	1.373	.172

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, some board meeting data is missing n 2007-2009 = 182, n 2007-2008 = 182, n 2008-2009 = 183

Appendix E.16 Change ORDI Multiple Regression Analysis (∆Board Meeting)

		∆2007-2009			∆2007-2008			∆2008-2009		
Adjusted R^2		.000			.016			-.015		
Durbin Watson		2.096			2.132			1.906		
F statistic		1.010			1.506			.560		
Significance		.421			.179			.762		
n		182			182			183		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.079	2.012	.046	.019	.622	.535	.044	1.267	.207
Country	(+)	-.023	-1.683	.094***	-.003	-.293	.770	-.017	-1.388	.167
∆Company Size	(+)	.018	.238	.812	.071	1.068	.287	.056	.493	.622
∆Managerial Ownership	(-)	.079	.531	.596	-.082	-.735	.463	-.019	-.110	.912
∆Board Meeting	(+)	.002	.373	.710	-.002	-.420	.675	.000	.090	.928
∆Leverage	(+)	.030	.258	.797	.253	1.953	.052**	.037	.277	.782
∆Profitability	(+)	-.095	-1.599	.112	-.078	-2.078	.039	-.038	-.669	.505

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, some board meeting data is missing n 2007-2009 = 182, n 2007-2008 = 182, n 2008-2009 = 183

Appendix E.17 Change MRDI Multiple Regression Analysis (∆Board Meeting)

		∆2007-2009			∆2007-2008			∆2008-2009		
Adjusted R^2		.020			.017			-.017		
Durbin Watson		1.518			1.948			1.835		
F statistic		1.624			1.533			.487		
Significance		.143			.170			.818		
n		182			182			183		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.002	.068	.946	-.022	-.949	.344	.011	.466	.642
Country	(+)	.012	1.402	.163	.020	2.448	.015**	-.005	-.581	.562
∆Company Size	(+)	-.056	-1.098	.274	-.018	-.380	.704	.041	.516	.607
∆Managerial Ownership	(-)	.111	1.133	.259	-.145	-1.764	.080***	.038	.310	.757
∆Board Meeting	(+)	.002	.757	.450	-.001	-.383	.702	-.002	-.958	.339
∆Leverage	(+)	.163	2.119	.036**	.092	.967	.335	.042	.458	.648
∆Profitability	(+)	-.018	-.455	.649	-.005	-.181	.856	.013	.338	.736

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, some board meeting data is missing n 2007-2009 = 182, n 2007-2008 = 182, n 2008-2009 = 183

Appendix E.18 Change CRDI Multiple Regression Analysis (∆Board Meeting)

		∆2007-2009			∆2007-2008			∆2008-2009		
Adjusted R^2		-.018			.002			-.009		
Durbin Watson		1.800			1.982			1.958		
F statistic		.465			1.075			.735		
Significance		.834			.379			.622		
n		182			182			183		
	Predicted sign	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**	**Coeff**	**T Stat**	**P-value**
Intercept		.103	2.037	.043	-.004	-.094	.925	.082	1.891	.060
Country	(+)	-.024	-1.377	.170	-.002	-.144	.886	-.018	-1.177	.241
∆Company Size	(+)	.049	.491	.624	.049	.500	.617	.090	.637	.525
∆Managerial Ownership	(-)	.095	.493	.623	-.390	-2.369	.019**	.062	.282	.778
∆Board Meeting	(+)	-.002	-.396	.692	.001	.194	.846	-.003	-.736	.463
∆Leverage	(+)	-.039	-.260	.795	.078	.409	.683	-.194	-1.175	.242
∆Profitability	(+)	.000	-.005	.996	.000	.008	.993	-.043	-.602	.548

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level, some board meeting data is missing n 2007-2009 = 182, n 2007-2008 = 182, n 2008-2009 = 183

Below is the results difference in additional analysis between additional main analysis and sensitivity analysis from Appendices E.4 – D.18:

- For the main analysis, change of country is significant in ‘market risk’ (MRDI) 2007-2008, moderately significant in ‘operating risk’ (ORDI) 2007-2009, ‘credit risk’ (CRDI) 2007-2009, and ‘business risk’ (BRDI) 2007-2008 (see Table 7.9).
- For the sensitivity analysis, change of country GDP is significant in ‘operating risk’ (ORDI) 2007-2009 and moderately significant in ‘market risk’ (MRDI) 2008-2009.
- For the main analysis, change of is not significant in all the regression (see Table 7.9).
- For the sensitivity analysis, change of size is only significant in BRDI in the change year 2008-2009.
- For the main analysis, board independence change is moderately significant only in change CRDI 2007 - 2008 (see Table 7.9).
- For the sensitivity analysis, board meeting change is not significant in all regressions.

Overall, the result for sensitivity analysis compare with the main analysis reveals that there is no significant difference in the significant of change in size and change of corporate governance related to RDI.

APPENDIX F: Regression after Potential Outliers Removed

Multiple regression analyses can be severely and adversely affected by the failure of the data to remain constant with the assumptions that customarily accompany regression models. Mahalanobis distance and Cook's distance as diagnostic methods are available to help identify certain kinds of failure in outlier data. Diagnostics are thus valuable adjuncts to regression analyses. Mahalanobis distance and Cook's distance are capable of producing partial plots in the SPSS program. This allows for the saving of residuals (Velleman and Welsch 1981). From the residual, Mahalanobis value should be < 26.52 (based on eight predictor variables), and Cooks value should be < 1 (Ghazali 2005).

The outlier analysis via mahalanobis and cook distance shows that, seven companies are potential outliers[1] (for each of the three years), and are thus initially dropped from the 600 annual reports sample resulting in a final 579 annual reports sample in this appendix analysis. Therefore, Appendix E runs regression analysis after dropping the outlier.

[1] Seven companies which are potential outliers are:

1. PT Asia Pacific Fibers Tbk
2. Coretrack Ltd
3. Metal Storm Limited
4. Mikoh Corporation Limitedmikoh Corporation Limited
5. Champbell Brother Limited
6. Oci Berhad
7. Jade Technologies Holdings Ltd.

Appendix F.1 Comparative Summary RDI Multiple Regression Analysis

Panel A RDI Model	CTY	Size	Man Own	Board Ind	Lev	Prof	Aud	Age Bus
RDI 2007 (N = 200)	S	X	S	S	X	X	X	X
RDI 2008 (N = 200)	S	S	S	S	X	S	X	X
RDI 2009 (N = 200)	X	S	X	X	X	S	X	X
RDI Pooled (N = 600)	HS	HS	HS	HS	X	HS	X	X

Panel B RDI Model (after outliers removed)	Cty	Size	Man Own	Board Ind	Lev	Prof	Aud	Age Bus
RDI 2007 (N = 193)	S	X	MS	HS	X	X	X	X
RDI 2008 (N = 193)	S	S	MS	S	X	S	X	X
RDI 2009 (N = 193)	MS	MS	X	X	X	X	X	X
RDI Pooled (N = 579)	HS	HS	S	HS	X	S	X	X

Legend: CTY = country; Size = natural log of total assets; ManOwn = managerial ownership; BoardInd = board independence; Lev = leverage; Prof = profitability; Aud = auditor; AgeBus= age of business; HS denotes statistically highly significant at 1%; S denotes statistically significant at 5%: MS denotes statistically moderately significant at 10%, and X means not statistical significant.

Appendix F.2 Comparative Summary Sub-RDI Multiple Regression Analysis

Panel A Sub-RDI Model	CTY	Size	Man Own	Board Ind	Lev	Prof	Aud	Age Bus
2007 (N = 200)								
BRDI	MS	S	X	X	X	X	X	X
SRDI	X	X	HS	S	X	HS	X	X
ORDI	HS	X	X	X	X	X	X	X
MRDI	X	HS	X	X	X	X	X	X
CRDI	X	X	X	X	X	MS	X	X
2008 (N = 200)								
BRDI	X	HS	X	MS	X	X	X	X
SRDI	X	MS	HS	HS	X	HS	X	X
ORDI	HS	X	X	X	X	MS	X	X
MRDI	S	X	X	MS	MS	HS	X	S
CRDI	X	X	X	X	X	X	X	X
2009 (N = 200)								
BRDI	X	HS	S	X	X	X	X	X
SRDI	X	X	X	X	X	S	X	X
ORDI	HS	X	X	X	X	X	X	X
MRDI	X	X	X	MS	X	HS	X	X
CRDI	X	MS	X	X	X	MS	X	X
Pooled (N = 600)								
BRDI	X	HS	HS	X	S	X	S	X
SRDI	X	X	HS	HS	X	HS	X	X
ORDI	HS	X	X	X	S	X	X	X
MRDI	X	X	X	HS	HS	HS	X	HS
CRDI	X	MS	X	X	X	S	X	X
Panel B Sub-RDI Model: (after outlier moved)	CTY	Size	Man Own	Board Ind	Lev	Prof	Aud	Age Bus
2007 (N = 193)								
BRDI	X	HS	X	X	MS	X	X	X
SRDI	X	X	HS	S	X	HS	X	X
ORDI	HS	X	X	MS	MS	X	X	X
MRDI	X	HS	X	X	X	X	X	X
CRDI	X	X	X	X	X	X	X	X

2008 (N = 193)								
BRDI	X	HS	X	MS	X	X	X	X
SRDI	X	MS	HS	S	X	HS	X	X
ORDI	HS	X	X	MS	S	X	X	X
MRDI	S	X	X	X	X	HS	X	MS
CRDI	X	X	X	X	X	MS	X	X
2009 (N = 193)								
BRDI	X	HS	S	X	X	X	X	X
SRDI	X	X	X	X	X	S	X	X
ORDI	S	X	X	X	X	X	X	X
MRDI	X	X	X	X	X	HS	X	X
CRDI	X	X	X	X	X	X	X	X
Pooled (N = 579)								
BRDI	MS	HS	HS	MS	S	X	HS	X
SRDI	X	X	HS	HS	X	HS	X	X
ORDI	HS	X	X	MS	HS	X	X	X
MRDI	X	X	X	S	S	HS	X	X
CRDI	X	X	X	X	X	S	X	X

Legend: CTY = country; Size = natural log of total assets; ManOwn = managerial ownership; BoardInd = board independence; Lev = leverage; Prof = profitability; Aud = auditor; AgeBus= age of business; BRDI = business risk disclosure index; SRDI = strategic risk disclosure index; ORDI = operating risk disclosure index; MRDI = market risk disclosure index; CRDI = credit risk disclosure index; HS denotes statistically highly significant at 1%; S denotes statistically significant at 5%: MS denotes statistically moderately significant at 10%, and X means not statistical significant.

Appendix F.3 Comparative Summary RDI Change Multiple Regression Analysis

Panel A RDI Model	ΔCTY	ΔSize	ΔMan Own	ΔBoard Ind	ΔLev	ΔProf
RDI Δ2007-2009 (N = 200)	X	X	X	X	X	X
RDI Δ2007-2008 (N = 200)	X	X	S	X	X	X
RDI Δ2008-2009 (N = 200)	X	X	X	X	X	X

Panel B RDI Model (after outlier moved)	ΔCTY	ΔSize	ΔMan Own	ΔBoard Ind	ΔLev	ΔProf
RDI Δ2007-2009 (N = 193)	X	X	X	X	X	X
RDI Δ2007-2008 (N = 193)	X	X	S	X	X	X
RDI Δ2008-2009 (N = 193)	X	X	X	X	X	X

Legend: ΔCTY = Δ country; ΔSize = Δ natural log of total assets; Δ ManOwn = Δ managerial ownership; Δ BoardInd = Δ board independence; ΔLev = Δ leverage; Δ Prof = Δ profitability; others control variables (auditor and age of business) are exclude in this model because there is only negligible change. HS denotes statistically highly significant at 1%; S denotes statistically significant at 5%: MS denotes statistically moderately significant at 10%, and X means not statistical significant.

Appendix F.4 Comparative Summary Change Sub-RDI Multiple Regression Analysis

Panel A RDI Model (N = 200)	ΔCTY	ΔSize	ΔMan Own	ΔBoard Ind	ΔLev	ΔProf
Δ2007-2009						
BRDI	X	X	X	X	X	X
SRDI	X	X	X	X	X	X
ORDI	MS	X	X	X	X	MS
MRDI	X	X	X	X	S	X
CRDI	MS	X	X	MS	X	X
Δ2007-2008						
BRDI	MS	X	X	X	X	X
SRDI	X	X	MS	X	X	X
ORDI	X	X	X	X	MS	S
MRDI	HS	X	S	X	X	X
CRDI	X	X	S	X	X	X
Δ2008-2009						
BRDI	X	X	X	X	X	X
SRDI	X	X	X	X	X	X
ORDI	X	X	X	X	X	X
MRDI	X	X	X	X	X	X
CRDI	X	X	X	X	X	S

Panel B RDI Model (after outlier moved) (N = 193)	ΔCTY	ΔSize	ΔMan Own	ΔBoard Ind	ΔLev	ΔProf
Δ2007-2009						
BRDI	X	X	X	X	X	X
SRDI	X	X	X	X	X	X
ORDI	MS	X	X	X	X	S
MRDI	X	X	X	X	S	X
CRDI	S	X	X	MS	X	X
Δ2007-2008						
BRDI	MS	X	X	X	X	X
SRDI	X	X	X	X	X	X
ORDI	X	X	X	X	S	S
MRDI	HS	X	S	X	X	X
CRDI	X	X	S	X	X	X
Δ2008-2009						
BRDI	X	X	X	X	X	X
SRDI	X	X	X	X	X	X
ORDI	X	X	X	X	X	X
MRDI	X	X	X	X	X	X
CRDI	X	X	X	X	X	X

Legend: ΔCTY = Δ country; ΔSize = Δ natural log of total assets; Δ ManOwn = Δ managerial ownership; Δ BoardInd = Δ board independence; ΔLev = Δ leverage; Δ Prof = Δ profitability; others control variables (auditor and age of business) are exclude in this model because there is only negligible change. BRDI = business risk disclosure index; SRDI = strategic risk disclosure index; ORDI = operating risk disclosure index; MRDI = market risk disclosure index; CRDI = credit risk disclosure index; HS denotes statistically highly significant at 1%; S denotes statistically significant at 5%: MS denotes statistically moderately significant at 10%, and X means not statistical significant.

Appendix F.5 RDI Multiple Regression Analysis

		2007			2008			2009			Pooled Data		
Adjusted R^2		.141			.134			.033			.113		
Durbin Watson		1.617			1.536			1.499			1.508		
F statistic		4.935			4.728			1.811			10.178		
Significance		.000			.000			.077			.000		
n		193			193			193			579		
	Predicted sign	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value
Intercept		.225	3.830	.000	.184	2.890	.004	.242	3.583	.000	.211	5.743	.000
Country	(+)	.017	2.514	.013**	.016	2.174	.031**	.013	1.685	.094***	.016	3.709	.000*
Company Size	(+)	.008	1.419	.158	.015	2.478	.014**	.012	1.889	.060***	.012	3.434	.001*
Managerial Ownership	(-)	-.069	-1.705	.090***	-.083	-1.787	.076***	-.041	-.889	.375	-.066	-2.555	.011**
Board Independence	(+)	.093	2.628	.009*	.088	2.228	.027**	.015	.370	.711	.068	3.085	.002*
Leverage	(+)	-.057	-1.639	.103	-.037	-1.042	.299	.005	.124	.901	-.030	-1.454	.147
Profitability	(+)	.050	1.068	.287	.102	2.013	.046**	.074	1.479	.141	.066	2.345	.019**
Auditor	(+)	-.019	-1.164	.246	-.007	-.395	.694	-.007	-.354	.724	-.010	-.963	.336
Age of Business	(+)	.000	.643	.521	-.00005	-.152	.879	.000	-.397	.692	.00001	.074	.941

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix F.6 BRDI Multiple Regression Analysis

		2007			2008			2009			Pooled data		
Adjusted R^2		.117			.106			.074			.114		
Durbin Watson		1.450			1.758			1.591			1.589		
F statistic		4.175			3.854			2.912			10.309		
Significance		.000			.000			.004			.000		
n		193			193			193			579		
	Predicted sign	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value
Intercept		.249	2.311	.022	.271	2.519	.013	.338	3.155	.002	.279	4.526	.000
Country	(+)	.020	1.656	.100	.002	.135	.893	.013	1.055	.293	.012	1.710	.088***
Company Size	(+)	.029	2.712	.007*	.031	3.048	.003*	.030	3.008	.003*	.030	5.143	.000*
Managerial Ownership	(-)	-.083	-1.127	.261	-.106	-1.364	.174	-.145	-1.973	.050**	-.112	-2.598	.010*
Board Independence	(+)	.105	1.622	.107	.124	1.872	.063***	-.035	-.553	.581	.067	1.822	.069***
Leverage	(+)	-.118	-1.842	.067***	-.070	-1.169	.244	-.018	-.310	.757	-.069	-1.985	.048**
Profitability	(+)	-.044	-.519	.604	.038	.443	.658	-.013	-.169	.866	-.013	-.284	.776
Auditor	(+)	-.049	-1.628	.105	-.046	-1.490	.138	-.046	-1.522	.130	-.045	-2.588	.010*
Age of Business	(+)	.000	.613	.541	.000	-.205	.838	.000	-.598	.551	-.00003	-.095	.924

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10 % level

Appendix F.7 SRDI Multiple Regression Analysis

		2007			2008			2009			Pooled data		
Adjusted R^2		.113			.147			.051			.103		
Durbin Watson		1.788			1.830			1.858			1.765		
F statistic		4.068			5.139			2.293			9.290		
Significance		.000			.000			.023			.000		
n		193			193			193			579		
	Predicted sign	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value
Intercept		.185	2.480	.014	.072	.874	.383	.135	1.542	.125	.118	2.475	.014
Country	(+)	-.010	-1.167	.245	-.005	-.488	.626	-.010	-.979	.329	-.008	-1.406	.160
Company Size	(+)	-.010	-1.381	.169	.014	1.788	.075***	.006	.768	.443	.004	.988	.324
Managerial Ownership	(-)	-.135	-2.655	.009*	-.161	-2.703	.008*	-.049	-.819	.414	-.115	-3.459	.001*
Board Independence	(+)	.106	2.375	.019**	.121	2.378	.018*	.067	1.310	.192	.106	3.694	.000*
Leverage	(+)	-.002	-.036	.972	-.017	-.375	.708	.049	1.028	.305	.004	.154	.878
Profitability	(+)	.218	3.689	.000*	.244	3.722	.000*	.154	2.360	.019**	.187	5.098	.000*
Auditor	(+)	.016	.799	.425	.001	.031	.975	-.006	-.263	.792	.005	.390	.697
Age of Business	(+)	.00007	.198	.843	.000	-1.265	.208	-.00009	-.208	.835	.000	-.692	.490

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix F.8 ORDI Multiple Regression Analysis

		2007			2008			2009			Pooled data		
Adjusted R^2		.215			.181			.109			.180		
Durbin Watson		1.499			1.365			1.343			1.388		
F statistic		7.556			6.301			3.949			16.859		
Significance		.000			.000			.000			.000		
n		193			193			193			579		
	Predicted sign	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value
Intercept		.401	2.960	.003	.170	1.262	.209	.293	1.933	.055	.281	3.503	.000
Country	(+)	.092	6.009	.000*	.090	5.750	.000*	.069	4.067	.000*	.084	9.182	.000*
Company Size	(+)	-.018	-1.373	.172	.009	.691	.490	.003	.251	.802	-.001	-.191	.848
Managerial Ownership	(-)	-.015	-.164	.870	.021	.210	.834	.115	1.098	.273	.037	.666	.506
Board Independence	(+)	.135	1.669	.097	.087	1.046	.297	.032	.361	.719	.085	1.758	.079***
Leverage	(+)	-.138	-1.712	.089***	-.160	-2.129	.035**	-.132	-1.587	.114	-.140	-3.102	.002*
Profitability	(+)	-.038	-.355	.723	-.089	-.827	.410	-.016	-.141	.888	-.059	-.952	.342
Auditor	(+)	-.013	-.359	.720	.042	1.101	.272	.025	.592	.554	.018	.811	.418
Age of Business	(+)	.000	.200	.842	.00008	.131	.896	.000	-.419	.675	-.00002	-.053	.958

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix F.9 MRDI Multiple Regression Analysis

		2007			2008			2009			Pooled data		
Adjusted R^2		.122			.072			.055			.064		
Durbin Watson		2.342			1.985			1.584			1.803		
F statistic		4.332			2.862			2.393			5.929		
Significance		.000			.005			.018			.000		
n		193			193			193			579		
	Predicted sign	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value
Intercept		.045	.833	.406	.110	1.568	.119	.149	2.059	.041	.106	2.738	.006
Country	(+)	-.007	-1.127	.261	.019	2.334	.021*	.009	1.061	.290	.007	1.562	.119
Company Size	(+)	.016	2.930	.004*	-.006	-.947	.345	-.010	-1.436	.153	.000	-.187	.852
Managerial Ownership	(-)	-.009	-.239	.812	-.040	-.781	.436	.006	.125	.901	-.018	-.662	.508
Board Independence	(+)	.036	1.112	.267	.055	1.267	.207	.058	1.353	.178	.049	2.133	.033**
Leverage	(+)	.012	.382	.703	.060	1.529	.128	.051	1.296	.197	.046	2.132	.033**
Profitability	(+)	.054	1.257	.211	.150	2.687	.008*	.167	3.104	.002*	.122	4.126	.000*
Auditor	(+)	-.013	-.835	.405	.013	.650	.517	.027	1.327	.186	.008	.719	.472
Age of Business	(+)	.000	1.079	.282	.001	1.796	.074***	.000	.981	.328	.000	2.262	.024**

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix F.10 CRDI Multiple Regression Analysis

		2007			2008			2009			Pooled data		
Adjusted R^2		-.017			-.014			-.002			.005		
Durbin Watson		1.666			1.815			1.685			1.724		
F statistic		.602			.661			.950			1.374		
Significance		.775			.725			.477			.205		
n		193			193			193			579		
	Predicted sign	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value
Intercept		.434	2.452	.015	.436	2.438	.016	.334	1.744	.083	.386	3.699	.000
Country	(+)	.011	.549	.584	-.001	-.049	.961	-.015	-.709	.479	-.001	-.086	.931
Company Size	(+)	-.005	-.298	.766	.012	.716	.475	.021	1.196	.233	.010	1.026	.305
Managerial Ownership	(-)	-.066	-.543	.588	-.019	-.147	.883	.070	.535	.593	-.009	-.118	.906
Board Independence	(+)	.071	.674	.501	-.148	-1.338	.183	-.102	-.907	.366	-.053	-.851	.395
Leverage	(+)	.078	.738	.462	.030	.296	.768	.119	1.131	.260	.069	1.176	.240
Profitability	(+)	.213	1.518	.131	.241	1.694	.092***	.194	1.363	.174	.202	2.522	.012**
Auditor	(+)	-.017	-.349	.727	-.010	-.205	.838	.023	.427	.670	.002	.072	.943
Age of Business	(+)	.000	-.599	.550	.000	-.622	.535	.000	-.547	.585	.000	-.911	.363

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix F.11 Change RDI Multiple Regression Analysis

		Δ2007-2009			Δ2007-2008			Δ2008-2009		
Adjusted R^2		.006			.001			-.019		
Durbin Watson		1.966			2.006			1.854		
F statistic		1.195			1.043			.390		
Significance		.311			.399			.885		
n		193			193			193		
	Predicted sign	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value
Intercept		.064	4.155	.000	.027	1.973	.050	.023	1.636	.104
Country	(+)	-.008	-1.404	.162	.000	-.154	.878	-.004	-.856	.393
ΔCompany Size	(+)	-.042	-1.244	.215	-.005	-.146	.884	.011	.212	.832
ΔManagerial Ownership	(-)	-.034	-.529	.597	-.114	-2.113	.036**	.055	.726	.469
ΔBoard Independence	(+)	-.002	-.055	.956	.022	.464	.643	.002	.053	.958
ΔLeverage	(+)	.086	1.548	.123	.075	1.160	.248	-.048	-.760	.448
ΔProfitability	(+)	-.052	-1.395	.165	.010	.252	.801	.001	.024	.981

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix F.12 Change BRDI Multiple Regression Analysis

		Δ2007-2009			Δ2007-2008			Δ2008-2009		
Adjusted R^2		.001			.007			-.014		
Durbin Watson		1.888			1.756			2.074		
F statistic		1.035			1.232			.566		
Significance		.404			.292			.757		
n		193			193			193		
	Predicted sign	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value
Intercept		.078	3.417	.001	.057	2.471	.014	.006	.271	.787
ΔCountry	(+)	-.012	-1.518	.131	-.016	-1.940	.054***	.007	.889	.375
ΔCompany Size	(+)	-.046	-.911	.363	.010	.178	.859	.027	.350	.727
ΔManagerial Ownership	(-)	-.126	-1.339	.182	-.052	-.557	.578	.129	1.138	.256
ΔBoard Independence	(+)	-.022	-.385	.701	.103	1.259	.210	.006	.088	.930
ΔLeverage	(+)	.094	1.153	.251	.097	.871	.385	-.088	-.921	.358
ΔProfitability	(+)	-.043	-.774	.440	.064	.911	.364	-.070	-.920	.359

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix F.13 Change SRDI Multiple Regression Analysis

		Δ2007-2009			Δ2007-2008			Δ2008-2009		
Adjusted R^2		-.025			.015			.002		
Durbin Watson		2.046			2.229			1.966		
F statistic		.231			1.479			1.077		
Significance		.966			.188			.378		
n		193			193			193		
	Predicted sign	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value
Intercept		.055	2.482	.014	.024	1.238	.217	.035	1.636	.104
ΔCountry	(+)	.001	.192	.848	.010	1.377	.170	-.010	-1.273	.204
ΔCompany Size	(+)	-.025	-.508	.612	-.042	-.932	.352	-.091	-1.182	.239
ΔManagerial Ownership	(-)	-.094	-1.034	.303	-.127	-1.610	.109	-.004	-.032	.974
ΔBoard Independence	(+)	.006	.100	.921	.060	.876	.382	.032	.516	.607
ΔLeverage	(+)	.013	.158	.875	-.063	-.677	.499	-.056	-.589	.556
ΔProfitability	(+)	.008	.157	.876	.074	1.251	.212	.115	1.514	.132

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix F.14 Change ORDI Multiple Regression Analysis

		Δ2007-2009			Δ2007-2008			Δ2008-2009		
Adjusted R^2		.015			.032			-.018		
Durbin Watson		2.009			2.029			1.887		
F statistic		1.497			2.072			.447		
Significance		.181			.058			.847		
n		193			193			193		
	Predicted sign	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value
Intercept		.076	2.181	.030	.028	1.030	.304	.025	.795	.427
ΔCountry	(+)	-.023	-1.887	.061***	-.006	-.627	.531	-.011	-1.008	.315
ΔCompany Size	(+)	.001	.007	.995	.044	.703	.483	.078	.686	.494
ΔManagerial Ownership	(-)	.051	.356	.723	-.088	-.808	.420	-.007	-.043	.965
ΔBoard Independence	(+)	.028	.315	.753	-.055	-.574	.567	-.063	-.677	.499
ΔLeverage	(+)	-.020	-.158	.874	.256	1.971	.050**	-.010	-.067	.947
ΔProfitability	(+)	-.206	-2.404	.017**	-.168	-2.049	.042	.009	.083	.934

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix F.15 Change MRDI Multiple Regression Analysis

		Δ2007-2009			Δ2007-2008			Δ2008-2009		
Adjusted R^2		.024			.037			-.022		
Durbin Watson		1.503			2.068			1.875		
F statistic		1.771			2.241			.326		
Significance		.107			.041			.923		
n		193			193			193		
	Predicted sign	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value
Intercept		.017	.753	.452	-.026	-1.304	.194	.024	1.041	.299
ΔCountry	(+)	.009	1.117	.266	.021	2.984	.003*	-.009	-1.118	.265
ΔCompany Size	(+)	-.074	-1.443	.151	-.011	-.250	.803	.010	.128	.898
ΔManagerial Ownership	(-)	.091	.950	.344	-.150	-1.918	.057***	.039	.325	.745
ΔBoard Independence	(+)	-.057	-.972	.332	-.092	-1.344	.180	-.006	-.086	.932
ΔLeverage	(+)	.213	2.552	.012**	.067	.720	.472	.035	.345	.731
ΔProfitability	(+)	.004	.074	.941	.012	.210	.834	.011	.134	.894

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix F.16 Change CRDI Multiple Regression Analysis

		Δ2007-2009			Δ2007-2008			Δ2008-2009		
Adjusted R^2		.020			.006			-.014		
Durbin Watson		1.928			1.842			1.753		
F statistic		1.649			1.196			.543		
Significance		.136			.310			.775		
n		193			193			193		
	Predicted sign	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value
Intercept		.133	2.840	.005	.023	.552	.582	.073	1.657	.099
ΔCountry	(+)	-.034	-2.050	.042**	-.011	-.710	.479	-.015	-.966	.335
ΔCompany Size	(+)	-.070	-.675	.500	-.023	-.236	.814	.134	.848	.398
ΔManagerial Ownership	(-)	.093	.482	.631	-.396	-2.369	.019**	.077	.332	.740
ΔBoard Independence	(+)	.220	1.840	.067***	.012	.085	.933	.052	.400	.690
ΔLeverage	(+)	.128	.757	.450	.025	.127	.899	-.155	-.791	.430
ΔProfitability	(+)	-.140	-1.214	.226	-.118	-.944	.346	-.042	-.267	.790

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Overall, Appendix F regressions analyses provides evidence that the results regressions after dropping the outlier (n = 579) are almost identical with the main regression (before dropping the outliers, n = 600). Therefore the full sample is used in this study.

APPENDIX G: Sensitivity Analysis for Managerial Ownership

Appendix G shows the sensitivity analysis results in managerial ownership which is re-measured by:

a) Categorized as 0 if not present managerial ownership and 1 if present.
b) Categorized 0 if have ≤ 5% managerial ownership and 1 if have > 5% managerial ownership.
c) Categorized 0 if have ≤ 10% managerial ownership and 1 if > 10% managerial ownership.
d) Categorized 0 if have ≤ 20% managerial ownership and 1 if have > 20% managerial ownership.
e) Categorized 0 if have ≤ 25% managerial ownership and 1 if have > 25% managerial ownership.

Appendix G.1 Sensitivity Analysis: RDI Multiple Regression Analysis (Managerial Ownership (present or not))

		2007			2008			2009			Pooled year		
Adjusted R^2		.122			.127			.067			.116		
Durbin Watson		1.652			1.626			1.543			1.554		
F statistic		4.470			4.611			2.776			10.785		
Significance		.000			.000			.006			.000		
n		200			200			200			600		
	Predicted sign	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value
Intercept		.221	3.646	.000	.171	2.667	.008	.223	3.308	.001	.202	5.448	.000
Country	(+)	.014	2.060	.041**	.013	1.650	.101	.008	1.062	.290	.012	2.822	.005*
Company Size	(+)	.007	1.244	.215	.014	2.425	.016**	.013	2.247	.026**	.011	3.457	.001*
Managerial Ownership (present or not)	(-)	.000	.010	.992	.011	.497	.620	.018	.854	.394	.008	.669	.504
Board Independence	(+)	.081	2.367	.019**	.092	2.397	.017**	.019	.510	.610	.067	3.147	.002*
Leverage	(+)	-.016	-.595	.553	-.016	-.635	.526	-.012	-.478	.633	-.013	-.865	.387
Profitability	(+)	.030	.940	.349	.045	2.008	.046**	.093	2.596	.010*	.047	2.926	.004*
Auditor	(+)	-.026	-1.609	.109	-.012	-.671	.503	-.005	-.272	.786	-.015	-1.445	.149
Age of Business	(+)	.000	1.325	.187	.000	.665	.507	-.00002	-.077	.939	.000	1.179	.239

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix G.2 Sensitivity Analysis: RDI Multiple Regression Analysis (Managerial Ownership ≤ 5% and > 5%)

		2007			2008			2009			Pooled year		
Adjusted R^2		.133			.127			.065			.119		
Durbin Watson		1.639			1.609			1.518			1.542		
F statistic		4.805			4.611			2.735			11.093		
Significance		.000			.000			.007			.000		
n		200			200			200			600		
	Predicted sign	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value
Intercept		.235	3.948	.000	.181	2.868	.005	.247	3.758	.000	.216	5.956	.000
Country	(+)	.017	2.505	.013**	.015	2.035	.043**	.012	1.553	.122	.015	3.559	.000*
Company Size	(+)	.006	1.112	.268	.014	2.372	.019**	.012	2.078	.039**	.011	3.269	.001*
Managerial Ownership ≤ 5% and > 5%	(-)	-.023	-1.503	.134	-.008	-.493	.623	-.011	-.655	.513	-.015	-1.611	.108
Board Independence	(+)	.071	2.048	.042**	.091	2.336	.021**	.014	.379	.705	.062	2.868	.004*
Leverage	(+)	-.021	-.773	.441	-.018	-.727	.468	-.015	-.597	.551	-.016	-1.113	.266
Profitability	(+)	.032	1.005	.316	.047	2.081	.039**	.087	2.450	.015**	.047	2.923	.004*
Auditor	(+)	-.023	-1.428	.155	-.011	-.585	.559	-.006	-.315	.753	-.013	-1.260	.208
Age of Business	(+)	.000	1.032	.303	.000	.496	.621	-.00008	-.251	.802	.000	.783	.434

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix G.3 Sensitivity Analysis: RDI Multiple Regression Analysis (Managerial Ownership ≤ 10% and > 10%)

		2007			2008			2009			Pooled year		
Adjusted R^2		.132			.130			.065			.119		
Durbin Watson		1.620			1.609			1.517			1.537		
F statistic		4.766			4.721			2.740			11.137		
Significance		.000			.000			.007			.000		
n		200			200			200			600		
	Predicted sign	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value
Intercept		.234	3.930	.000	.183	2.919	.004	.248	3.764	.000	.216	5.968	.000
Country	(+)	.017	2.500	.013**	.016	2.170	.031**	.011	1.546	.124	.015	3.582	.000*
Company Size	(+)	.006	1.079	.282	.014	2.360	.019**	.012	2.107	.036**	.011	3.277	.001*
Managerial Ownership ≤ 10% and > 10%	(-)	-.022	-1.413	.159	-.017	-.990	.323	-.012	-.687	.493	-.017	-1.705	.089***
Board Independence	(+)	.076	2.210	.028**	.090	2.323	.021**	.014	.372	.710	.063	2.939	.003*
Leverage	(+)	-.021	-.765	.445	-.019	-.770	.442	-.015	-.608	.544	-.016	-1.127	.260
Profitability	(+)	.033	1.035	.302	.047	2.106	.037**	.088	2.475	.014**	.047	2.960	.003*
Auditor	(+)	-.025	-1.527	.129	-.011	-.603	.547	-.007	-.364	.716	-.014	-1.380	.168
Age of Business	(+)	.000	1.039	.300	.000	.405	.686	-.00008	-.274	.784	.000	.759	.448

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix G.4 Sensitivity Analysis: RDI Multiple Regression Analysis (Managerial Ownership ≤ 20% and > 20%)

		2007			2008			2009			Pooled year		
Adjusted R^2		.132			.135			.066			.122		
Durbin Watson		1.639			1.621			1.530			1.551		
F statistic		4.790			4.888			2.769			11.413		
Significance		.000			.000			.006			.000		
n		200			200			200			600		
	Predicted sign	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value
Intercept		.225	3.819	.000	.176	2.830	.005	.239	3.694	.000	.209	5.820	.000
Country	(+)	.016	2.460	.015**	.017	2.287	.023**	.012	1.588	.114	.015	3.684	.000*
Company Size	(+)	.007	1.261	.209	.014	2.443	.015**	.013	2.215	.028**	.011	3.478	.001*
Managerial Ownership ≤ 20% and > 20%	(-)	-.025	-1.469	.144	-.027	-1.450	.149	-.016	-.822	.412	-.023	-2.199	.028**
Board Independence	(+)	.074	2.125	.035**	.092	2.396	.018**	.016	.424	.672	.063	2.980	.003*
Leverage	(+)	-.020	-.726	.469	-.017	-.695	.488	-.014	-.550	.583	-.014	-1.007	.314
Profitability	(+)	.031	.982	.328	.047	2.129	.035**	.092	2.571	.011**	.048	3.031	.003*
Auditor	(+)	-.023	-1.405	.162	-.010	-.544	.587	-.006	-.311	.756	-.013	-1.256	.210
Age of Business	(+)	.000	.951	.343	.00008	.275	.783	-.00009	-.308	.759	.000	.597	.550

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Appendix G.5 Sensitivity Analysis: RDI Multiple Regression Analysis (Managerial Ownership ≤ 25% and > 25%)

		2007			2008			2009			Pooled year		
Adjusted R^2		.135			.137			.066			.124		
Durbin Watson		1.639			1.620			1.524			1.548		
F statistic		4.892			4.937			2.763			11.590		
Significance		.000			.000			.007			.000		
n		200			200			200			600		
	Predicted sign	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value	Coeff	T Stat	P-value
Intercept		.231	3.910	.000	.178	2.863	.005	.241	3.716	.000	.212	5.924	.000
Country	(+)	.016	2.397	.017**	.016	2.255	.025**	.011	1.561	.120	.015	3.612	.000*
Company Size	(+)	.007	1.194	.234	.014	2.456	.015**	.013	2.224	.027**	.011	3.454	.001*
Managerial Ownership ≤ 25% and > 25%	(-)	-.029	-1.686	.093***	-.031	-1.559	.121	-.016	-.796	.427	-.027	-2.463	.014**
Board Independence	(+)	.075	2.195	.029**	.093	2.427	.016**	.016	.409	.683	.064	3.016	.003*
Leverage	(+)	-.019	-.708	.480	-.016	-.648	.518	-.013	-.530	.597	-.014	-.968	.334
Profitability	(+)	.032	1.006	.316	.049	2.194	.029**	.091	2.565	.011**	.049	3.088	.002*
Auditor	(+)	-.024	-1.484	.140	-.011	-.638	.524	-.007	-.376	.708	-.014	-1.397	.163
Age of Business	(+)	.000	.893	.373	.00007	.234	.815	-.00009	-.311	.756	.00009	.516	.606

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Managerial ownership in the sensitivity analysis (categorized 0 if not present managerial ownership and 1 if present) is not significant in all of the four regressions (see Appendix G.1). Managerial ownership in the sensitivity analysis (categorized 0 if have ≤ 5% managerial ownership and 1 if have > 5% managerial ownership) is not significant in all of the four regressions (see Appendix G.2). Managerial ownership in the sensitivity analysis (categorized 0 if have ≤ 10% managerial ownership and 1 if have > 10% managerial ownership) is moderate significant only in pooled data with negative coefficients (see Appendix G.3). Managerial ownership in the sensitivity analysis (categorized 0 if have ≤ 20% managerial ownership and 1 if have > 20% managerial ownership) is significant only in pooled data with negative coefficients (see Appendix G.4). Managerial ownership in the sensitivity analysis (categorized 0 if have ≤ 25% managerial ownership and 1 if have > 25% managerial ownership) is moderate significant in 2007 and significant in pooled data with negative coefficients (see Appendix G.5).

Based on the sensitivity analysis in the categorized of managerial ownership based on the percentage of ownership, this thesis conclude that the companies which have ≤ 15% and > 15% also ≤ 50% and > 50% managerial ownership are most effects risk disclosure (see Section 6.6).

APPENDIX H: RDI Regression with Year Variable

Appendix H shows the multiple regression analysis results use the pooled sample and control for years using dummies.

Appendix H. 1 RDI Multiple Regression Analysis (Pooled)

		Pooled Data		
Adjusted R^2		.149		
Durbin Watson		1.576		
F statistic		12.632		
Significance		0.000*		
n		600		
	Predicted sign	Coeff	T Stat	P-value
Intercept		.182	4.988	.000
Country	(+)	.016	3.830	.000*
Company Size	(+)	.011	3.303	.001*
Managerial Ownership	(-)	-.072	-2.947	.003*
Board Independence	(+)	.060	2.844	.005*
Leverage	(+)	-.013	-.950	.343
Profitability	(+)	.051	3.255	.001*
Auditor	(+)	-.013	-1.326	.185
Age of Business	(+)	.000004	.240	.811
Year	(+)	.019	3.923	.000*

*highly significant at 1% level, **significant at 5% level, *** moderately significant at 10% level

Overall, Appendix H regression analysis provides evidence that the results regressions in the pooled sample and control for years using dummies are almost identical with the main regression (see Table 6.4). Therefore the separate regression year by year is used in this study to overcome the problem of repeated measure.